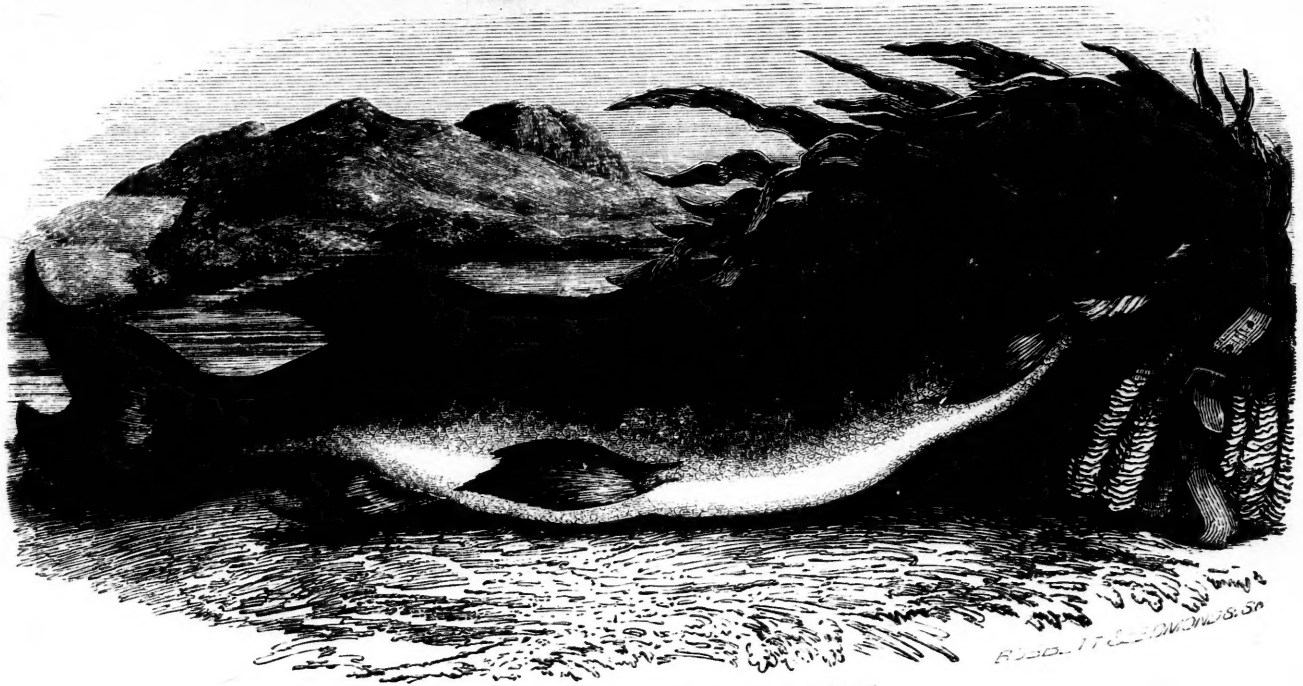

MASKALONGE. GREAT LAKES.

ESOX ESTOR.

FROM NATURE, ON WOOD, BY H.W. HERBERT.

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FRANK FORESTER'S

FISH AND FISHING

OF THE

UNITED STATES

AND

BRITISH PROVINCES OF NORTH AMERICA.

ILLUSTRATED FROM NATURE BY THE AUTHOR.

BY

HENRY WILLIAM HERBERT,

AUTHOR OF "FIELD SPORTS," "WARWICK WOODLANDS," ETC.

Third Edition, Revised and Corrected, with an

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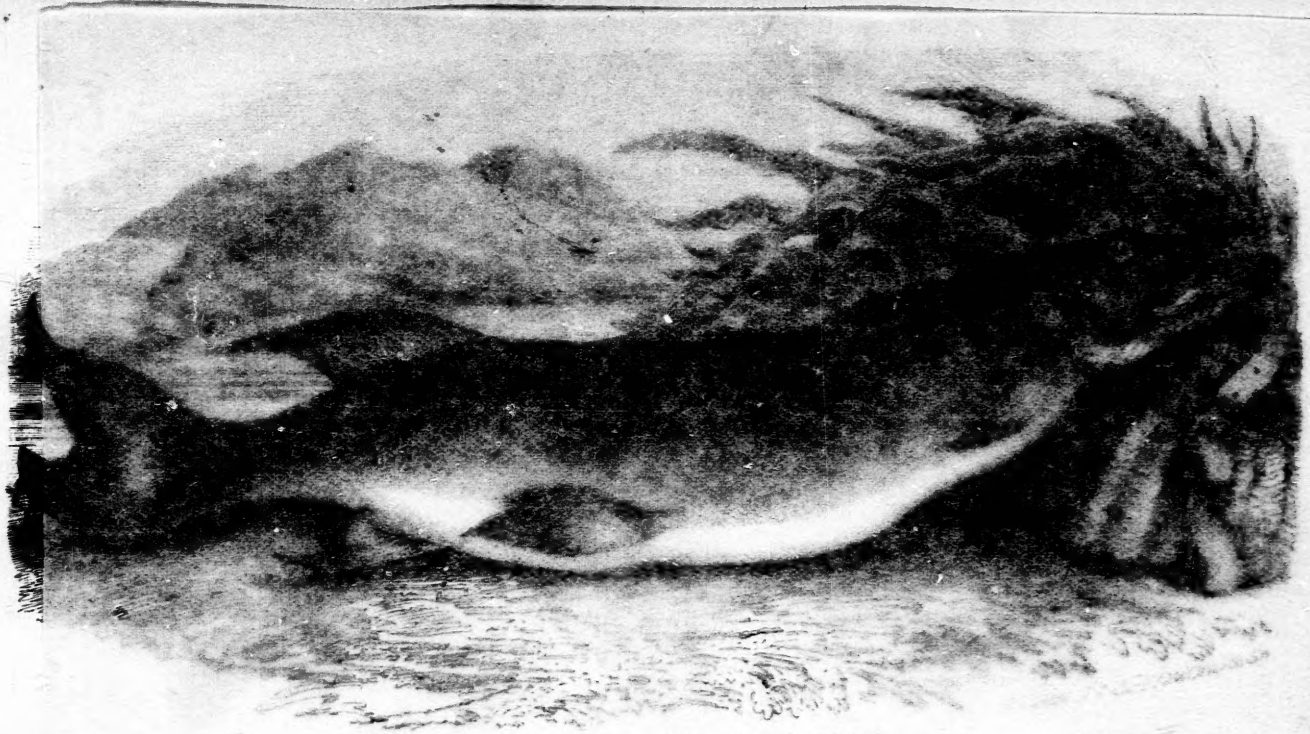
NEW YORK:

STRINGER & TOWNSEND, 222 BROADWAY.

1855.



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692

To

FRANCIS SURGET, Esq.,

OF NATCHEZ, MISSISSIPPI,

This Work, on the Fish and Fishing

of

North America,

Is dedicated, both as to an ardent and intelligent

Sportsman,

And a Firm Friend,

By his Friend and Serv't,

FRANK FORESTER

THE CEDARS, August 28, 1849

ADVERTISEMENT.

In offering this work to the public, I have little to say, as its character speaks for itself, but to indicate the sources of the information which it contains, and to give credit to those who, by their works, letters or conversation, have aided me in its execution.

And first, I must express my sincere gratitude to my friend, Professor Agassiz, who kindly afforded me every assistance in his power, with free access to his fine library, and unrivalled collection of fishes, from which most of my drawings are taken

To my friend Mr. Perley, of St. Johns, I am indebted for much valuable and interesting information in regard to the fish and fisheries of New Brunswick and Nova Scotia; and to Mr. DeBlois, of Portland, for a communication respecting the great Trout of Sebago Lake, in Maine, which was probably a distinct variety, though the fact can not be easily now ascertained—the noble fish being, alas! extinct.

To Mr. Yarrel's fine work on British Fishes, to Hofland's British Angler's Manual, to Richardson's Fauna Boreali Americana, to DeKay's Fishes of New York, to Soyer's Cooking Book, I thankfully record my indebtedness for extracts more or less copious.

All the cuts were drawn by myself, on wood, either from the dead fishes themselves, or from original drawings in the possession of Professor Agassiz, lent to me for this purpose, with the exception of the True Salmon—which is copied from his beautiful work on the Fresh-Water Fishes of Europe—of the Arctic Charr, or Masamacush, and the Arctic Grayling—which are taken from Richardson's Boreali Ame-

ricana—of the Salmon Trout—taken from Yarrel—and of the Lake Trout and Pike Pearch, from DeKay's Fauna of the State of New York.

For the fidelity and excellence of the engraving, I am indebted to Messrs. Bobbett & Edmonds, and Brotherhead, by whom, with one or two trifling exceptions, all the cuts have been executed.

To the Messrs. Conroy I have to record obligation for preparations of the fine specimens of various Trout, Lake and Salmon Flies, which are engraved in this work; and I take this opportunity of strongly and cordially recommending them to all my friends and readers, as decidedly, in my opinion, the best rod and tackle makers in the United States.

A Second edition of this work having been already called for, I have taken the opportunity carefully to revise it, and correct the unavoidable errors, so far as I have discovered them, which must occur in a book treating of a subject so comprehensive as mine.

A tour through the north-western lakes, during the past summer and autumn, has given me opportunity to observe the habits and characteristics of many fish which previously I had known only by report of others—to collect information relative to the mode of taking them—and, hence, to verify or correct opinions heretofore expressed.

A work of this nature must necessarily be more or less compiled, as no man can be expected to have fished in every State of the Union, or to be personally acquainted with the fishes of each and all. To relate personal experiences, where they exist—to collect the best authorities, where there are authorities; and otherwise to be silent, rather than give character to vulgar rumors—I deem the writer's duty.

This, to the best of my ability, I have endeavored to do; and I can

only add, that, as it is not delightful to err, I shall be too much obliged to those who will *kindly* convince me of error, and enable me to correct it.

In addition to those, my obligations to whom I have heretofore gratefully recorded, I have pleasure in referring to Mr. KING, of Charleston, South Carolina; Messrs. MANDEVILLE and COCLEIGH, of Geneva; and Mr. GREGORY, of Adirondach, N. Y., for information and specimens from various parts of the country.

Several kind correspondents, and some ingenious critics, have pointed out errors, and suggested emendations, of which I have thankfully availed myself.

All the matter thus collected will be found embodied in a copious Supplement to this second edition, provided with a separate Index, under the head of the fishes to which it relates; and including some authentic information relative to Southern Fishing, obtained from Mr. KING.

A few pages on Deep-sea Fishing will also be found in the Supplement; as it is a subject to which—myself considering it very inferior as a sport—I perhaps gave scarce "verge enough" in my first edition.

I am happy once again to express my gratitude to the public in general, for a kind reception and favorable hearing; and to my critics, on the whole, for kindness and candor.

I feel, however, that on one point it is not only my right, but my duty, to add a few words; and having been charged—though anonymously—with plagiarism, the most heinous crime of authorship, to give my readers a chance *audire alteram partem*.

It is charged on me, that I have stolen from a work entitled "the American Angler's Guide," by Mr. BROWN, of New York; and that with intent to injure the man, and detract from his book.

In the first place, on page 30, I have quoted seven lines from the Angler's Guide, introduced by seven lines, complimentary to Mr Brown, his work, and his tackle depot. On page 153, I corrected an error in his Latinity, *Essex* for *Esox*, with another complimentary notice of his book. On pages 291 to 302 *passim*, I extracted quotations from the writings of a gentleman—with whose papers, originally published in the Buffalo Commercial, and republished in the N. Y. Spirit of the Times, I had long been acquainted—from Mr. Brown's book, in which they were again quoted, crediting them to the author, not to Mr. Brown.

I was informed, while in Buffalo in the Spring, by mutual friends of myself and the author, Messrs. Seaver and Haskins, of the Buffalo Courier, that there could be no objection to my using these quotations; and, desiring to do so, I cut the quotations from Mr. Brown's book, in preference to hunting up old files of newspapers.

In Mr. Brown's work, appended to a quotation from this writer, on the Black Bass, was one original paragraph of six unimportant lines, connecting a second quotation from another hand. This connecting paragraph, and the fact of its being a second quotation, I casually overlooked; and the six original lines of Mr. Brown were printed, on my page 302, without quotation marks. The second quotation was marked as quoted, though attributed to a wrong person.

These facts speak for themselves, I trust, and need no comment. Herewith, therefore, I dismiss forever an unpleasant topic, and, with much gratitude, and all kind wishes to my friends in particular, and the public in general, subscribe myself, as ever,

Their Friend and Servant,

Frank Forester.

The Cedars, January, 1850.

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INTRODUCTORY REMARKS.

To DEAL with a subject so wide as the FISH and FISHING of an extent of country greater than the whole of Europe, stretching almost from the Arctic circle to the Tropics, from the waters of the Atlantic to those of the Pacific Ocean, may seem, and indeed is, in some respects, a bold and presumptuous undertaking. It were so altogether, did I pretend to enter into the natural history of all, or even of one-hundredth part, of the fish peculiar to this continent and its adjacent seas.

Such, however, is by no means my aim or intention. I write for the sportsman, and it is therefore with the sporting-fish only that I propose to deal; as, in a recent work on the Field Sports of the same regions, it was with the game animals only that I had to do. In the prefatory observations of that work, I endeavored to make myself understood as to what constitutes *game*, in my humble opinion, as regards animals of fur and feather. I did not, it is true, expect, or even hope, to suit the views and notions of everybody, particularly when I looked to the great variety of soils, regions, and climates, for the inhabitants of which I was writing; and to the extreme latitude and laxity of ideas concerning sportsmanship which prevail in this country.

One would suppose it was sufficiently evident, that a work of the

magnitude of the Universal Encyclopædia, and nothing short of that, would suffice to give an elaborate essay and disquisition on every separate sort of sport, which every separate individual, of every separate State in the Union, may think proper to practice for his own pleasure or profit.

I therefore determined to confine myself, in the first place, to those sports only which are truly Field Sports in the highest acceptation of the term, and which are established as such by the consent of genuine sportsmen.

In the second place, I restricted myself to those sports which are purely and peculiarly American, and which, as such, are not treated of at all, or, if at all, understandingly, by European writers.

The natural history, the generic distinctions, the migrations, habits, haunts, seasons, and the mode of pursuing and taking, in the most artistical and sportsmanlike manner, of such animals as are peculiar to this continent, which have never been a subject of investigation to the sporting naturalist, seemed to me to afford a topic interesting and agreeable to the writer, and not devoid of some pretension toward entertaining, and perhaps instructing, the general reader.

At the same time, neither pretending nor hoping to make my work *perfect*, I thought proper to exercise my own judgment in deciding what species of sports are to be regarded as Field Sports at all, what as American Field Sports, and what as requiring description, analysis, or explanation.

Some men consider the shooting of migratory thrushes, and golden-winged woodpeckers—which it pleases them to call robins and high-holders—as well as small song-birds in general, as a field sport; I do not.

Many men—I might say, of the rural parts of the Eastern and Middle States, *most* men—consider squirrels, raccoons, opossums, ground-hogs,

and such like vermin, as being game; I do not. Therefore I dealt not with any of these, nor apologise for not dealing with them.

Again. Fox-hunting on horseback, in a well-fenced, arable, or pasture country, is the finest of all field sports, beyond a question. But the facts, that one pack of foxhounds is now kept at Montreal, that another was kept a few years since by the members of the British legation at Washington, and that a few planters, in two or three Southern States, amuse themselves occasionally and irregularly by fox-hunting, do not constitute fox-hunting an American field sport; which it is not; as is demonstrated by the undeniable fact, that there are not above three States out of thirty, more or less, in which the fox is pursued as anything but vermin.

There are, moreover, many reasons which render it almost impossible that fox-hunting ever shall become an American field sport. In the Northern and Eastern States, where only, as a general rule, the country is sufficiently cleared of timber to allow of this pursuit in perfection, the severity of the winter, and the jealousy of farmers in regard to trespass on their lands, and the breaking of their fences, combine to render it impracticable. In the Southern States, the woodland character of the country, and the frequency of swamps, bayous, and similar obstacles, destroy all its peculiar excellences, and detract infinitely from its excitement, and its scientific character.

Yet once more. Had fox-hunting been, what it is not, an American field sport, I should still have dismissed it in a few pages. Because, being a sport thoroughly understood, and carried to the utmost perfection in the Old World; a sport, so far as it is one here at all, perfectly identical on the two sides of the Atlantic, and as such, having no peculiarities, and requiring no new precepts here; and, above all, being a sport on which more able and excellent treatises have been written than on any other in the whole range of sporting subjects, and

that by such men as Beckford and Nimrod—names as familiar as household words to all who can sit a horse, or halloo to a hound—it would have been an act, if not of impertinence, at least of total supererogation, to fill up the pages of a work devoted to a new class of subjects, with trite remarks on an old one, or with quotations from books within the reach of every sportsman.

All this which I have here set down in relation to my work on Field Sports, and to some strictures which have been made upon it, is simply explanatory of my intentions with regard to this work.

These are to furnish what information I can in relation to the classes, migrations, habits, breeding seasons, and the modes of taking, of those which I call and consider sporting or game fishes; to insist on the generic distinctions, and the true names and definitions of the various species and families; to show briefly how the various families and classes may be distinguished one from the other, thereby enabling sportsmen to avoid the constant errors and blunders into which they are now falling in the confusion of distinct varieties and orders; and putting it in their power, by the accurate observance, and correct recording, of a few simple signs, to render invaluable service to the cause of science, in one of the most important, and the least understood of its branches

And, before I proceed farther, I shall beg gentlemen from remote sections of the North, East, West and South, not to wax wrathful and patriotically indignant, nor to reclaim fiercely against the author of this work, because they fail to find therein described some singular local mode of capturing some singular specimen of the piscine race known in their own districts, and there regarded as a sporting-fish, but unknown as such to the world at large.

Some gentlemen doubtless regard bobbing for eels, and bait-fishing through holes cut in the ice—others, hauling up sharks with ox-chains

and tenter-hooks—and others yet, harpooning garpikes, as excellent sport, and as scientific fishing, as many more will probably deem of hauling the seine, or fishing with the set-line, or the deep-sea line. None of these things come under my ideas of fair or sporting fishing; and the gentlemen who admire these and similar practices, I beg leave to premonish that they will be surely disappointed if they peruse the pages of this work. By omitting to do so, therefore, they will spare themselves a displeasure, and the author an animadversion.

Fresh-water-fishing especially is its subject. Lakes, estuaries, rivers, brooks, its scene; and the Salmon, in all its varieties, the Pike, the Bass, and the Pearch, the fish with which it will principally deal. All game fish will, however, find a place in its pages; all those, I mean, which can be, and usually are, taken with the rod and reel; nor will a few pages be denied to deep-sea fishing; and to the consideration of some of the finny tribe which visit our rivers and shores, and which, from various causes, such as peculiarity of habit, singularity of structure, excellence on the table, or the like, may appear worthy of a passing notice, although not coming strictly within the sportsman's category of game fishes.

All the modes of rod-fishing will be treated of in their places; but fly-fishing, spinning with the live, and trolling with the dead bait, more especially will be discussed; as, for my own part, I regard these as the only true and sportsmanlike modes of operation. Bottom-fishing, ground-baiting with the float and sinker, and the like, are doubtless all very well in their way; and will perhaps, in many instances, even with sporting fishes, be found the most killing, as they are clearly the easiest methods; while, with other varieties, they are the only modes that can be adopted; still they are to fly-fishing, or spinning the minnow, what shooting sitting is to shooting on the wing; and the fisher who is proud of lugging out of their native element twenty trout

by main force, aided by a lob-worm or roe-bait, stands in the same relation to him who baskets his three or four brace with the artificial fly and single-gut artistically cast, as the gunner who pot-hunts his bagful of birds, treeing his ruffed grouse, and butchering his quail in their huddles on the ground, does to the crack shot, who stops his cock in a blind brake, with the eye of faith and the finger of instinct, or cuts down his wild-fowl, skating before the wind at the rate of a mile a minute, deliberately rapid and unerring.

FRANK FORESTER'S

FISH AND FISHING.

THE GAME FISH OF NORTH AMERICA.

It is with fishing as a sport, not as a source of national wealth or individual epicureanism, that I have to do; therefore it is of game or sporting fishes only that I propose to treat.

Again, it is true that no sportsman captures that, which, captured, is worthless; and that to be game, whether bird, beast, or fish, is to be eatable. Therefore it is of eatable* fishes alone that I propose to treat.

By game fish, I understand those which, being eatable, will take the natural or artificial bait with sufficient avidity, and which when hooked have sufficient vigor, courage and velocity to offer such resistance, and give such difficulty to the captor, as to render the pursuit exciting.

By these qualities of the fish, corresponding qualities of the fisherman are called forth, and the greater the wariness of the fish before taking the hook, compelling the use of the most delicate tackle, the greater his fury and activity when struck, requiring the nicest skill, temper and judgment, the higher does he stand on the list; and by

Note to Revised Edition.—It will be readily seen that the phraseology of this page is altered in this edition. It is so, not that I have taken any new ground, but because it appears my language was not so definite as to enable all persons to understand what that ground is. I certainly supposed it unnecessary to state so self-evident a fact as that game is eatable.

* Hence my non-mention of that very curious fish, the Garpike or Alligator Gar, *Esox Osseus*. He is no more game than the Shark or Dog-Fish, both of which men catch for fun.

these qualities, not by the comparative value of his flesh, is his rank decided.

For though of all field sports the motive* and origin is to kill for the table, and not to kill for the sake of killing, still the sport to be derived from them lies in the excitement of pursuit, and difficulty of capture—not in the number or value of the game.

Wanton butchery of useless brutes, and greedy pot-hunting are the Scylla and Charybdis, between which the true sportsman, and he only, steers intermediate.

It is the wariness, the subtlety and the caution of the Salmon, rendering it necessary to use materials of the slenderest and most delicate nature, and to apply them with the utmost nicety, which makes the triumph over him so far more enthralling to the real fisherman than that over the Pickerel or Mascalonge of equal weight, whose greater voracity and inferior intellect permits the use of a gimp hook-length, and a silken or flaxen line, instead of the fine gut, tinctured to the very color of the water, and the casting-line of almost invisible minuteness.

The same is the superiority of rod and reel-fishing to the use of the hand-line, whether in trolling or in deep-sea fishing; because in both these the sport is at an end, so soon as the fish is hooked; it being a mere question of brute strength whether the victim shall be conquered or not, when once fast at the end of a line capable of pulling in a yearling bullock.

On the contrary, it is not the wariness and cunning, but the vigor, the speed, the fierce courage and determined obstinacy of the true Salmon, the Brook Trout, when of fine size and well-fed, the various kinds of larger Pike or Pickerel, the Bass, and some others, which gives such a zest to their capture, as compared with the smaller and duller fish which may be pulled out as fast as a hook can be baited and thrown in; or the larger and more torpid fish, such as the Lake Trout, the Carp, and the Pearches, some of which, after a single boring plunge, resign themselves almost without a struggle, and are mastered with no resistance save that occasioned by their own dead weight.

I have said, above, that it is upon these qualities of boldness and

Note to Revised Edition.—The killing of dangerous carnivora, as a matter of defence, is not here considered, because in this country, as in Europe, the practice and the necessity have long passed away.

fierceness, combined with wariness in biting, and of vigor and determination in resistance, apart from any intrinsic value of the fish, or excellence of his flesh, that his rank for gameness must depend.

It is remarkable, however, that all those fish which are the most game, the boldest, the strongest, the bravest, and the most obstinate, are invariably the finest also for culinary purposes, and the most highly appreciated by the gourmet on the board, as well as by the fisherman in the river or the mere.

With very few exceptions, the Game Fish are those which do not confine themselves either to salt or fresh water, throughout the year, but visit the one or the other, as their habits and tastes, but principally the propagation of their species, direct them. These migratory fish are, without any exception, the strongest, the boldest, and, as such, afford the best sport of their tribe; nor are they, for the most part, to be surpassed by any in excellence, firmness, and flavor, when in their best condition.

Those fish which never visit the salt water at all, are unquestionably so much inferior to others of their own family which run periodically to the sea, that they are with difficulty recognized as belonging to the same order with their roving brethren; while of those, none of which are known to leave the fresh-water, but two or three kinds, are worth taking at all; and even these are not to be compared with the migratory, or the pure sea-fish.

All excellence is, of course, in some degree comparative, and I am well aware that in the interior of the country, where sea-fish are unknown, and where the culinary science is merely in a rudimental state, many fish are deemed excellent, and are sought out as dainties, simply because they are better than the ordinary tenants of the same waters; while in any place, where they could be considered in regard to the commonest sea-fish, they would be entirely disregarded, and sold, if at all, as among the cheapest and most worthless articles of human food.

In the same way, many species of game, both of fur and feather, are highly regarded in districts where markets are rare, and well-fed and tender butchers' meat unknown; and in such places you will find many tasteless and inferior birds and animals highly valued, which in cities, where a variety of flesh and fowl is daily to be procured, where poultry

and butchers' meat can always be had, both fat and tender, no person of ordinary taste or judgment in the art of eating, would allow to come upon his table.

These few observations I premise in this place, because I foresee distinctly that my remarks will be animadverted upon, more or less severely, by the inhabitants of those districts in which the varieties of fish which I regard as almost worthless prevail; the same thing having occurred with regard to my work on Field Sports, concerning which gentlemen have waxed unwisely indignant as regards this or that bird, or this or that mode of cooking it, when they have plainly lacked the means of drawing the requisite comparison.

But to proceed: the Game Fish of this country may be divided, first, into two general classes of fresh and salt-water fishes; and these may be again sub-divided, each, into other two, the fresh as migratory and non-migratory; the salt, as into deep-sea and shoal-water; although, perhaps, to speak with perfect precision on the subject, no deep-sea fish should be called a Game Fish. Very many persons are, however, greatly addicted to the sport of making excursions from our larger cities to the various sea-banks, for the purpose, it is true, of enjoying the sea breeze and the excitement of the sail, combined with the attractions of the chowder, or the clam-bake, the champagne and the cotillion, which are wont to complete the day's amusement, but still with the object of fishing likewise; and these persons, even if their sport be not of the loftiest or most sporting character, will reasonably expect to find some account of a favorite pursuit.

Nor, in very truth—though I eschew large congregations of humanity for sporting purposes, deeming them rather social and convivial in their true character, and holding sociality and conviviality, though excellent things in their way, as utterly averse to the spirit of sportsmanship—have I not found it good sport, at times, to sally out from some sequestered fishing hamlet, in the trim schooner or more humble yawl, and try my fortune with the Cod, the Haddock, and the Halibut; or if, perchance, on the rocky shores of Eastern New England, with the delicate and lively Whiting, too little known, as yet, to the epicures of America, although unsurpassed in excellence by few, if any, of his race. With deep-sea fishing I shall deal, therefore, although briefly, as becomes its rank in proportion with the more exciting and

scientific branches of the piscatory art; nor will the shoal-water, or bay and estuary fishing, as they are practised on our coasts, be denied so many pages, as will appear proportionate to the number or excellence of the species taken in that sport. Many of these are delicious fish on the table; but the sport of taking them consists, principally, in the frequency of their biting; and the skill requisite for their capture lies mainly in the knowing the most favorable bottom-grounds, the state of the tides and eddies most propitious to success, and the most killing baits at various seasons.

In throwing out and drawing in the bait, there is, comparatively speaking, small science; and taking the fish when once hooked, little skill and small judgment; temper, and a moderate degree of patience, alone seem needful.

It is not, indeed, to be denied that in this, as in all other ground-bait and bottom-fishing, an old experienced angler shall take many times more fish than the tyro sitting alongside of him in the same boat, and working with apparatus precisely similar, and baits identical.

This is, however, to be attributed much to practice, and habit—much to watchful observation of minutiæ, such as the foulling of the line, the correct depth of the plummet or sinker, and such like—and more to delicacy of hand in feeling, appreciating and humoring the victim, when coquetting and nibbling about the bait. It cannot be likened to the skill exerted in casting and managing the fly, or the spinning-minnow; much less to the playing, killing and basketing the heaviest kind of fish with the lightest running tackle.

It must be acquired by habit and practice, if it be thought worth the trouble of acquisition, but it can scarcely be taught at all by instruction or example; and written precepts to this end would be altogether worthless, as they would be dull and unamusing.

I shall now proceed to the enumeration of the Game Fishes of the United States and British Provinces of North America, according to my understanding of their game qualities—regarding them, first, under their great divisions of fresh and salt-water fish; then as migratory or non-migratory, and deep-sea or shoal-water.

And here I shall observe that I adopt these grand divisions as paramount to the natural distinctions of genera, families, and the like, as I conceive that such a treatment of my subject will be most condu-

cive to the pleasure and advantage of sportsmen, for whose benefit I especially write; while the naturalist will find that, subject to these divisions, he will recognise all his old acquaintances, and perhaps encounter some new ones, under the generic and specific divisions and definitions to which he has been accustomed. All the Game Fish of this country belong to a few well-marked families; and with the sole exception of a few deep-sea fish, are included in two large classes abdominal *Malacopterygii*, and *Acanthopterygii;* the first class being those which have all the fin-rays soft and flexible; and the second, those which have a part of the fin-rays hard and spiny, as is the case with the Pearch and the Bass, besides some others.

The deep-sea fish, to which I have alluded as coming under a third class, are the sub-brachial *Malacopterygii*, which have a different arrangement of the fins, although they have the soft and flexible fin-rays in lieu of spines, as in the first class named. To this class belong the Cod, Haddock, Whiting, and such other of the deep-sea fish, especially Flat-Fish, as can, by any extension of the term, be allowed to figure as Game Fish; for, under this head, I cannot by any means include the Ray, the Skate, or the Lampreys, which come under the same class with the Sharks, *Chondropterygii*, or cartilaginous fishes, the skeletons of which are not, as in the *Malacopterygii* or *Acanthopterygii*, composed of bone, but of cartilaginous or gristly matter. The Eel, which is not a Game Fish, is of the class *Malacopterygii*, but with a different arrangement of fins, which gives him the title of *Apodal*. He hardly deserves notice at all, unless as an article of food, and if mentioned, will be kept aloof from the others.

Of these two great generic divisions, then, are all the fresh-water fishes more or less distinct families; and all the shoal-water sea-fishes likewise, with which we have to do; nor is there any line to be drawn as regards the migratory or non-migratory fishes, some of these belonging to each of these two great classes.

It will be well to observe here, that I consider all those fish which run up rivers and streams into the fresh-water for the purpose of spawning, which pass a considerable portion of the year, and are principally, if not wholly, taken in such water, as fresh-water fishes; although a resort to the salt-water is necessary to the reinvigoration

of their constitutions; and, it is probable, to the excellence of their flesh, and the courage and boldness of their tempers.

To this class belong several of the finest and most important of all our fish, both as regards the table, and the sport; for to this are directly referable the Salmon, that king of the piscine world, the Sea Trout, the Striped Bass, the Shad, and the Smelt; both of which, for reasons which I shall give, when I am to treat of them, under their own proper heads, I admit as Game Fishes.

Our fresh-water fishes, then, all belonging to the two classes above named, *Malacopterygii*, soft-finned, and *Acanthopterygii*, or spiny-finned, are divided into the following families:—

Of the first, Abdominal Malacopterygii, we have

The family of Salmonidæ, of which the true sea Salmon is the type, and of which there are many varieties and sub-genera, both migratory and non-migratory; the principal are

Genus Salmo:

The True Salmon, *Salmo Salar*.

The Greatest Lake Trout—Mackinaw Salmon—*Salmo Amethystus*.

The Northern Lake Trout—Siskawitz—*Salmo Siskawitz*.

The Lake Trout—Salmon Trout—*Salmo Confinis*.

The Sebago Trout, *Salmo Sebago*.

The Arctic Char, *Salmo Hoodii*.

The Sea Trout, White Trout, or Silver Trout—*Salmo Trutta Marina*.

The Brook Trout, *Salmo Fontinalis*.

Genus Osmerus:

The Smelt, *Osmerus Viridescens*.

Genus Thymallus:

The Arctic Grayling, *Thymallus Signifer*.

Genus Coregonus:

The White Fish, *Coregonus Albus*.

The Otsego Bass*—misnomer—*Coregonus Otsego*.

* This very beautiful fish so closely resembles the White-fish, *Coregonus Albus*, as to be conceived by many persons to be merely a casual variety. This, however, does not appear to be in truth the case. It is greatly to be regretted that true and distinctive names should not be attached to fishes which, having been absurdly mis-

2. Family Siluridæ,
   Containing many species, Cat-Fish, Bull-Heads, &c., unworthy of notice, except,
   Genus Silurus:
   The Great Cat-Fish, *Pimelodes Huron.*
3. Family Cyprinidæ,
   Containing many varieties. The Chub, Sucker, Shiner, Roach, Dace, Bream, &c., of no account except for bait, unless it be two imported species.
   The Common Carp, *Cyprinus Carpio*, and
   The Golden Carp, *Cyprinus Auratus.*
5. Family Clupeidæ.
   Genus Alosa:
   The Shad,* *Alosa Præstabilis.*
   Genus Clupea:
   The Herring, *Clupea Harengus.*
6. Family Esocidæ.
   Genus Estor:
   The Mascalonge, *Esox Estor.*
   The Northern Pickerel, *Esox Lucioides.*
   The Common Pickerel, *Esox Reticulatus.*
   The Long Island Pickerel, *Esox Fasciatus.*
   The Garpike, *Esox Osseus.*
   Beside two or three other species, found in the Pennsylvanian and Western waters.

This brings us to the end of our fresh-water, soft-finned fishes; or of such, at least, as are in any wise worthy to be accounted Game Fishes; and we come to the second division, *Acanthopterygii*, or spiny-

named by the ignorant early settlers, still go by those stupid misnomers—as in the present instance, where a fish having no possible analogy to a Bass, and, indeed, belonging to a different class of fish, "soft-finned," is termed Bass. The analogous fish in England are known as Gwyniad, Vendace and Pollan. I would suggest "Otsego Lavaret" as a very suitable name for this *unnamed* species.

* I somewhat doubt this distinction. I have drawings, made from life, of two varieties of Shad taken in New York bay, agreeing precisely with *Alosa Finta* and *Alosa Communis*, of Yarrel—the Twaite and Allice Shad of England—to the latter of which I would refer this fish.

finned fishes, which, though it is Baron Cuvier's first division, I have postponed to the *Malacopterygii*, or soft-finned fishes, on account of the greater estimation in which they are held, especially the noble Salmon, Pike and Shad families, by both epicure and sportsman.

Second, however, to these only are several of the families of the second class, and scarcely inferior even to these is the splendid genus *Labrax*, unquestionably, next to the Salmon, the most sporting fish in all respects in the world, and in his absence *facile princeps*.

Of the class ACANTHOPTERYGII, then, we have

THE FAMILY PERCIDÆ.

1. GENUS PERCA :

THE YELLOW PEARCH, *Perca Flavescens*.

Of this there are three or four very closely-allied varieties.

THE WHITE PEARCH, *Perca Pallida*.

THE COMMON PEARCH, *Perca Fluviatilis*, and others of less note, among which are the genera CORVINA and POMOTIS.

2. GENUS LABRAX :

THE STRIPED BASS—Rock Fish—*Labrax Lineatus*.

3. GENUS LUCIOPERCA :

THE PIKE PEARCH—American Sandre, Ohio Salmon, &c.—*Lucioperca Americana*.

THE CANADIAN SANDRE, *Lucioperca Canadensis*.

4. GENUS GRISTES :

THE BLACK BASS—Oswego Bass—*Gristes Nigricans*

5. GENUS CENTRARCHUS :

THE ROCK BASS, *Centrarchus Æneus*

6. GENUS OTOLITHUS :

THE WEAK-FISH, vulgo Trout, *Otolithus Regalis* and *Carolinensis*.

And with these, unless the reader choose to add the Eel, of the class *Apodal Malacopterygii*, family *Anguillidæ*, the list of the fresh-water sporting fishes of the United States and British Provinces may be said to close.

Of these fish, the True Salmon, *Salmo Salar*, the Sea Trout, *Salmo Trutta Marina*, the Brook Trout, *Salmo Fontinalis*, the Arctic Charr, *Salmo Hoodii*, and perhaps the Sebago Lake Trout, are migratory, as is also the Arctic Grayling, *Thymallus Signifer;* all the other Lake

Trout, and such of the Brook Trout as are found in small streams above impracticable falls, or in spring ponds, or lakes without outlets, are stationary, or non-migratory; and the consequences of their habit may be very readily discovered in the inferiority of their flesh, both in color and firmness of muscle, and in their comparatively lazy gait, and want of game qualities, vigor and endurance.

Of other soft-finned fishes, the Smelt, *Osmerus Viridescens*, the Shad, *Alosa Præstabilis*, and the Herring, *Clupea Harengus*, are migratory from salt to fresh-water, and so perhaps is the Weak-Fish, in the Southern waters, there misnamed Trout,* *Otolithus Carolinensis*.

The White-Fish, *Coregonus Albus*, and the Otsego Bass, *Coregonus Otsego*, are partially migratory from the deeper waters of the lakes which they inhabit. All the *Siluridæ*, *Cyprinidæ*, and *Esocidæ*, are stationary fish.

Three or four of the above species and varieties I have admitted with no small doubt; and first of these, in the family *Salmonidæ*, the Common Lake Trout,† *Salmo Confinis*, of DeKay; because I can see no sufficient cause for distinguishing this fish from the Greatest Lake Trout, or Mackinaw Salmon, with which it appears to me to be identical, except in size; whereas size alone is a very insufficient cause of separation. Secondly, the Sebago Lake Trout, which is to be found, as a distinct variety, in no work on American Ichthyology; and yet I have thought it best to insert it, on the authority of several distinguished sportsmen, who have had frequent opportunities of comparing it with the ordinary Lake Trout, and who pronounce it to be a new and nondescript fish, unless it be the True Salmon degenerated. This last hypothesis I am unwilling to listen to, as I disbelieve in the degeneration of animals, in peculiar localities, unless confined under unnatural circumstances, as a sea-running fish in fresh-water, without means

* This fish I have never seen; but I greatly doubt that the fish called "Trout," in the South, is identical with the Northern Weak-Fish. From Professor Agassiz, I understand it to be a peculiar variety of the Weak-Fish, *Otolithus*, being spotted rather than striped, and thus differing somewhat from it, and frequenting fresh streams, which the others do not.

* Note to Revised Edition.—With regard to this fish, I am satisfied that it is distinct from *Amethystus*, though closely allied to it. It is a deeper and shorter fish. See Supplement.

of egress. I understand that this Sebago Trout has access to the sea; there is no reason, therefore, why, if originally a true Salmon, it should have lost its true characteristics in waters having their exit through the Saco, more than in those which discharge via. the Kennebec, or why it should continue to run up a smaller river, when it has deserted all the larger rivers westward of the Penobscot, with the exception of a very few which are, perhaps, still taken in the Androscoggin and the Kennebec, where, a few years ago, they absolutely swarmed.

With regard to this fish, however, I hope, before concluding this work, to receive more decided information from some of my obliging correspondents in that quarter; and perhaps even a specimen by which to compare with the other varieties of this genus.

Again, of the Sea Trout, or White Trout, I have my doubts, whether it be not a grilse, or Salmon of the third year. It is as yet, so far as I know, unfigured and undescribed; but my information concerning it from excellent fishermen on the waters where it abounds, the rivers, mainly, which fall into the Bay of Gaspe and the Gulf of St. Lawrence, is so clear and strong, that I prefer noting it as a questionable variety, in the hopes of calling to it the attention of older naturalists than myself, and of those who have better opportunities of obtaining and examining specimens.

Lastly, the Red-bellied Trout, *Salmo Erythrogaster*, of Dr. DeKay, I decline to insert on his authority, being entirely unconvinced as to its being anything more than a mere accidental variety. The whole of that region of lakes and rivers, in the Northeastern angle of New York, in which this variety is said to exist, teems with accidental varieties of the Brook Trout, of almost every size, as well as shade and color, both of flesh and external tints. The Trout of no two of these lakes or rivers are precisely identical. The same may be said of Brook Trout from various waters in Long Island. These differences, however, are not deemed sufficient, consisting, mainly, in variations of hue, not of form, bony configuration, scales, or fins, whereon to found generic distinctions.

The same remarks apply to a small fish, which Dr. DeKay has described at length, and figured under a new name, as the Troutlet, in his fauna of New York; and which is unquestionably nothing more than the young fry of the common Brook Trout, while it is so small as

to retain the lateral transverse bars, or clouded bands, which have lately been discovered to belong to the fry of every known variety of the family of the Salmon, and which have caused all the confusion, and given rise to all the various theories. concerning the Parr of Great Britain.

Into all these points I shall enter more fully under their appropriate heads, when treating of the separate fish to which they relate.

The Smelt, *Osmerus Viridescens*, I have mentioned, though not properly a Game Fish—for it is probable that the statements of its being taken with the hook refer to the Atherine or Sand Smelt—because there are some errors to be refuted, connected with him and the young of the true Salmon, which would not so easily be dealt with otherwise; and the Shad, *Alosa Præstabilis*, I have elevated to the rank of a Game Fish, not merely on account of the excellence of his flesh in a culinary point of view, but because I am well satisfied by indisputable proofs, that although it is not usual to attempt the capture of this fish sportsmanlike, the fault rests not with the Shad, but with the angler.

He will not only take the fly, and on some occasions very freely, but runs strongly away with the line, and fights hard before he is subdued. I regard him a very decided addition to the list of Amercian sporting-fishes.

The common Herring can be taken very readily in the same manner, and I have had very considerable amusement in killing them with a gaudy peacock-tail fly, in New York harbor, in the vicinity of Fort Diamond, at the Narrows.

With these exceptions, and the two varieties of White-fish, one of which is absurdly misnamed Otsego Bass, having about as much relation to a Bass as it has to a Flounder, all that I have named are admitted to be game by all fishermen; and these I have mentioned, because I have little or no doubt that they also, like their European congeners, the Gwyniad of Wales and the Pollan of Ireland, may be occasionally taken with the artificial fly.

All these fish are *Coregoni*, and are very nearly analogous to one another, forming a sort of intermediate link between the families of *Salmonidæ* and *Clupeidæ*, or Salmon and Shad, although they are included for many satisfactory reasons among the former—the common

people in Great Britain calling them the Lake-water Herring, while in the United States they not unfrequently pass by the name of Shad-salmon.

The flesh of all the varieties is delicate and highly-flavored. The desire of comparing these American *Coregoni* with the British varieties, and of bringing them somewhat more into general notice, has induced me to notice them, rather than their game nature.

I now proceed to the salt water fishes, both those taken in deep, and those in shoal water, of the various families above-named; and thereafter shall arrange them according to their haunts and habits.

Of those salt-water fish of the Atlantic coasts which afford the most real sport to the angler, and which are alone taken with the rod and reel, all the families belong to the class of the *Acanthopterygii*, or spiny-finned fishes, none of the soft-finned fishes of the abdominal division being taken in the shoal waters of the bays and estuaries; while the deep-sea fish are all of the sub-brachial *Malacopterygii*, unless we may consider as such the Sea Bass and Porgee, which are, however, as often or oftener caught in shallow water.

Salt-water fish, taken in shoal water, river mouths, and the like, *Acanthopterygii*, spiny-finned, we have of the family

PERCIDÆ, whereof the Pearch is the type.

GENUS LABRAX:

THE STRIPED BASS, *Labrax Lineatus.*

Mentioned above as a fresh-water fish, being frequently caught in rivers far above tide-water, as well as in the estuaries, and even in the surfs on the ocean borders.

GENUS CENTROPRISTES:

THE SEA BASS, *Centropristes Nigricans.*

SCIENIDÆ.

GENUS LEIOSTOMUS:

THE SEA CHUB—Lafayette Fish—*Leiostomus Obliquus.*

GENUS OTOLITHUS:

THE WEAK-FISH, *Otolithus Regalis.*

THE SOUTHERN TROUT, *Otolithus Carolinensis.*

GENUS UMBRINA:

THE KING-FISH, *Umbrina Nebulosa.*

GENUS POGONIAS:

THE DRUM-FISH, *Pogonias Chromis.*

SPARIDÆ.

GENUS SARGUS:

THE SHEEP'S-HEAD, *Sargus Ovis.*

GENUS PAGRUS:

THE PORGEE, *Pagrus Argyrops.*

SCOMBRIDÆ.

GENUS TEMNODON:

THE BLUE-FISH—Skip-Jack—*Temnodon Saltator.*

LABRIDÆ.

GENUS TAUTOGA:

THE TAUTOG—Black Fish—*Tautoga Americana.*

These complete the list of those salt-water fish which are of any repute as affording sport to the angler in shoal water; they may all be taken with the rod and reel, in the bays, mouths of rivers, and shallow inlets along the greater portion of our coast, especially in the vicinity of reefs, the piles of old docks, or the hulls of sunken vessels, around which they are often found in so large shoals, and bite so freely and rapidly, as to afford a very high degree of amusement. Many persons are extremely fond of this kind of fishing, though it cannot sustain a moment's comparison with Trouting, much less with Salmon fishing, or indeed with trolling or spinning for the Pike and the Black Bass.

Several of the above-mentioned fishes are of rare excellence; the Weak Fish and Blue Fish, when quite fresh out of the water, are not easily surpassed; but the King Fish and the Sheep's-head, the latter a migratory fish, visiting us during the summer months only, are in far greater esteem, being regarded by epicures as inferior to none which are taken in our waters.

The most extraordinary day's sport I have seen recorded in this line, fell to the lot of a gentleman of New York, well known as an enthusiastical amateur and a most skilful proficient in the gentle art, and was thus recorded at the time in the Commercial Advertiser of 1827. I note the circumstance, and quote the following lines from a very useful, unpretending, and not therefore less agreeable compendium, "The American Angler's Guide," published, I believe, by Mr. Brown, well known as the proprietor of the Angler's depot, where he keeps an excellent assortment of tackle of all kinds, in Fulton street

I have often derived both information and entertainment from this good little manual, which is succinct and portable, and I strongly recommend it to my readers.

The feat to which I have alluded is thus recorded in its pages:—

"On Friday last, a gentleman of this city went out fishing from Rockaway into Jamaica Bay, with his son, a lad of twelve years of age. They commenced fishing at half-past seven in the morning, spent half an hour in dining at noon, and quit fishing at half-past one, having taken with their rods, in six hours, *four hundred and seventy-two* King-Fish. Their guide was JOSEPH BANNISTER; none of these fish were taken by him, as he was diligently employed the whole time in preparing bait."

The writer adds that he admits this to have been "an extraordinary performance;" but he goes on to say "that he has many times taken above one hundred in a tide, though of late years these fish have become scarce in those waters, it being supposed that their enemy, the Blue-Fish, by preying on their young, have caused the scarcity."

It is scarcely necessary, I presume, to remark that no such feats are to be performed now-a-days; and he is a happy and an envied man, who succeeds, at present, in capturing a few brace of this delicious game fish.

I now come to the last section of my work, the deep-sea fishes, very few of which are worthy of remark in connexion with the angler's sport, although they are all of superior excellence, as dainties.

These are all soft-finned fishes, but they form a separate class of the *Malacopterygii*, owing to a peculiar arrangement of their fins, the bones supporting the ventrals being attached to the bones of the shoulders which support the pectorals, whence they have obtained the term sub-brachial.

To this class of sub-brachial *Malacopterygii* belong the two families of *Gadidæ* and *Pleuronectidæ*, Cod and Flat-Fish, to one or other of which pertain all the species which are taken by the drop-line on our coast; a sport which is almost too dirty, as well as too laborious, to be in very truth a sport.

Of the family *Gadidæ*, of which the Cod is the type, we have

THE COMMON COD, *Morrhua Vulgaris.*

THE HADDOCK, *Morrhua Æglefinis.*

The Whiting, *Merlangus Americanus*.

And although there are several other species of more or less estimation for the table, as the Torsk or Tusk, *Brosmius Vulgaris*, the Hake, *Merlucius Vulgaris*, and some others, none but these are such as to require enumeration in a work of this description.

Of the second family, *Pleuronectidæ*, I shall think it enough to mention,

The Halibut, *Hippoglossus Vulgaris*, which is the largest species of this family, as well as the best that is taken in American waters; for the species of Turbot, *Rhombus*, which is found on the coasts of Massachusetts bay, and that neighborhood, is greatly inferior, both in size and quality to the celebrated European fish of the same name.

The Flounder, of New York, *Pleuronectes Dentatus*, which is also frequently taken, though more commonly by accident, while in pursuit of finer fish, than as the angler's prime object, is rather a delicate fish, and often bites freely.

With this brief enumeration of sea-fish I shall content myself, as the description and habits of others, though curious, and full of interest to the icthyologist and student of nature, belong rather to the department of science, than to the craft of the angler.

I may, however, mention, not as objects but accessories of the sport, the Atherine, *Atherina Menidia*, a variety of the fish known in England as the Sand Smelt, here commonly called the Spearling or Sparling, and much used as a bait, for which its bright silvery colors particularly adapt it.

The British variety is frequently taken with the hook; and on the Southern coasts, where the true Smelt is unknown, it is commonly known and sold as that fish, to which it bears some degree of similarity in flavor, as well as in the cucumber smell common to both when freshly taken from the water.

I am not aware that the American fish is ever eaten, though it is very abundant on the coasts; in appearance, it so closely resembles the European species, that on a slight inspection it would be taken for it.

The Sand Launce, *Ammodytes Lancea*, is also held in high estimation as a bait for sea and hand lines, owing to its silvery brightness. It is for the former of these little fish that the Blue-Fish, *Temnodon*

Saltator, and the Striped Bass, *Labrax Lineatus*, strike at the polished bone, pearl, or metal *squid*, as it is termed, of the fisherman, when it is made to play with a rotatory motion, glancing through the water, in the wake of a swift-sailing boat, or in the surf upon the outer beaches.

Having now accomplished the dry work of enumerating and classifying those of the fish of America, whether fresh or salt-water, which I consider worthy of the sportsman's notice, I shall proceed to describe them more or less briefly, according to the degree of interest attaching to their habits, migrations, growth, and breeding; and thereafter to the best and most improved mode of taking them; best, I mean, as regards art, piscatorial science, and sport, not looking to the mere amount of slaughter, but considering in this instance the *suaviter in modo*, long before the mere *fortiter in re*.

And here I will venture to request my reader, who may have proceeded thus far in this volume without finding very much to interest or enlighten him, not to lay by its pages in disgust; as this portion, necessarily partaking much of the character of a catalogue, can hardly be expected to be very amusing, while I think I can promise that he will find something to awaken his interest, whether he be a scientific naturalist, or a mere sportsman, before he has advanced many pages farther; inasmuch, as thanks especially to the assistance of my good friend Professor Agassiz, and other correspondents, I believe I shall have the pleasure of laying before him something that is not only new, but curious and highly interesting concerning the growth, the breeding, and the varieties, several of them hitherto undescribed, of the family of Salmon, *Salmonidæ*, of North America, to the consideration of which I come without farther delay

AMERICAN FISHES.

SALMONIDÆ,

OR

THE SALMON FAMILY.

It must not be supposed, although, for want of reflection on the subject, many persons probably may expect it, that the closest observer and most accurate discriminator of the facts on which the science of the naturalist is founded, can lay down the law with regard to the habits, the food, the haunts, the appetites, or even the distinct species, of that portion of the animal creation which dwell for the most part unseen in the bosom of the waters, with the same certainty as he can those of domestic animals, or even of birds and beasts, *feræ naturæ*.

Of the latter even, especially of wild birds, which emigrate from clime to clime with the change of seasons, there has been much difficulty in ascertaining the growth, the age, and the changes of plumage, from the immature to the adult animal, or from the winter to the summer dress—so much so, that out of individuals differing in age, sex, or season, of the same family, and belonging to a single species, in many instances, two, three or more distinct varieties have been created by naturalists.

Much has been effected, indeed, of late, in these particulars, owing to the greater science and experience of modern naturalists—who now

prefer the investigation of facts to the building up plausible theories—to the greater diffusion of knowledge and love of scientific inquiry among the masses, and, in no slight degree, to the able and laborious system of experiments which have been set on foot and carried out by country gentlemen and sportsmen, to many of whom the world of letters is indebted for very interesting and remarkable discoveries.

It is but a few years, comparatively speaking, since that accurate observer and delightful writer, GILBERT WHITE, of Selborne, the most charming rural naturalist whom England—perhaps the world—has produced, thought it not unworthy of his time or talents to enter into a long train of investigation and argument, in order to prove that the Swallow—as then appears to have been largely, if not generally believed—did not pass the winter months in a torpid state, either in the hollows of decayed trees and caverns, or beneath the waters of stagnant pools and morasses.

In like manner Mr. AUDUBON has been peculiarly minute in describing the migrations of the Sora Rail, as witnessed by himself, for the purpose of counteracting the notion, which I myself still know to be prevalent among the vulgar and ignorant where these birds abound, that they burrow in the mud during the cold season, hybernating like the Marmot or the Bear.

If, then, errors so gross were commonly in vogue concerning animals, the greater portion of whose life is spent before our very eyes; which make their nests, rear their young, come and go visibly, and in such manner that their presence and absence, nay, the periods of their departure and return, must be observed even by the careless and inattentive looker-on; much more is it to be expected that the habits, nay, the sexes, ages, and distinct species of fish, which rarely present themselves to the eyes even of the most curious inquirers, which come and go unseen and unsuspected, whose mysteries of generation and reproduction are all performed in a medium the least penetrable to the eyes of science, whose changes of size and color, from infancy to maturity, pass utterly beyond our ken, should have been misconceived, misinterpreted, and misdescribed.

Within the last few years more has been done to elucidate these mysteries, and to bring us to an accurate knowledge of this interesting

portion of the animal creation, than in many previous centuries; and although much yet remains, infinitely more, doubtless, than has been done, still we have very recently attained much certain knowledge regarding several of the most interesting families; we have arrived at results which, by simple deduction, show us how we may hope to arrive at more, having now obtained data wherefrom to advance and discover the process by which to do so.

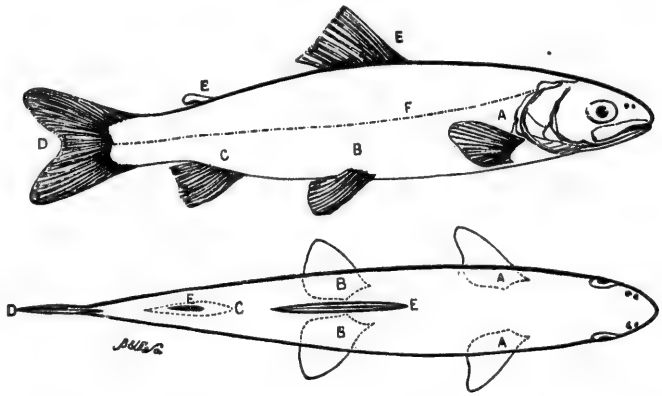
The means by which thus much has been accomplished, may be described briefly, as the taking nothing for granted, assuming nothing on hearsay beyond facts, and on investigating everything carefully and painfully, not following too readily preconceived opinions, nor being misled by mere external and superficial resemblances, but being guided by comparison and experiment, as founded in a great degree on anatomy and osteology.

In the examination and comparison of fishes, the clear understanding of a few simple facts, which it is necessary to observe and record, will enable any sportsman to describe any supposed new variety or species, with such accuracy as to render his description of the highest value for scientific purposes; to make it, in short, such that a naturalist shall be justified in pronouncing positively thereupon as to the genus, species, sex, and perhaps age, of the variety described or discovered.

The first point to be observed is the *nature* of the fins, as hard-rayed and spiny, as in the Pearch, the Bass, and others which it is needless here to enumerate; or soft-rayed and flexible, as in the Pike, the Salmon, the Carp, and many more. The second, is the *position* of the fins; and to elucidate this point to the unscientific reader, I here subjoin an outline with references, to render this method of examination comprehensible and easy of acquisition to anybody.

The subject of this outline is the young of the Lake Trout, *Salmo Trutta Lin.* of the European continent. This figure, which is taken by permission from Mr. Agassiz' fine work, *Histoire Naturelle des Poissons d'Eau douce de L'Europe Centrale*, represents a young Salmon Trout, taken in the lake of Neufchatel, at the end of summer, less than a year old. The lower figure gives the outline of the same fish, as seen from above. Other cuts of the same simple description will show the formation of the head, the gill-covers and the dental

system, from which after the fins, and the number of vertebræ, the specific distinctions are most easily ascertained.



It will be seen clearly, at the slightest inspection of the beautiful little fish which has been selected as the subject of this cut, and which is a species of Lake Trout from the continent of Europe, that it has eight fins in all, including the tail, six of which are displayed in the lateral view, two being on the farther side; and seven in the view of the back taken from above; the eighth, which is indicated by a dotted line, being on the under part of the fish.

Of these appendages, by which the motion, position in the water and direction of the animal are regulated; the two nearest the head, one on either side, AA, are the pectorals; the two somewhat farther back, one on either side, BB, are the ventrals; the one on the under side, yet farther back, C, the anal; the tail, D, the caudal; and the two on the ridge of the back, EE, the dorsal; F is the lateral line.

These are all the denominations of fins possessed by any fish, although the number and size, as well as the structure, vary in the various species, which are thus easily distinguished.

Of these fins, all the classes of fish, concerning which this book will treat, with one exception, the apodal *Malacopterygii*, one species of which will be slightly mentioned, all possess the following:—

Two pectorals.
Two ventrals.
One anal.
One caudal.
One dorsal.

No fish has more than two pectorals, or two ventrals; many have several anals, and several dorsals; none, unless deformed or monstrous, has more than one caudal.

The *apodal Malacopterygii*, of which I have spoken, lack the ventrals entirely; wherefore their name *apodal*, footless; the ventral being assumed as performing the function of feet in the quadruped, although somewhat fancifully.

Now, on the *texture* of these fins is founded the distinction between the two first orders of fishes, as instituted by Baron CUVIER; the first order, *Acanthopterygii*, having the rays, by which the filamentous part of the fins is supported and extended, in part hard, spinous, and in some species, sharp and prickly; whence the designation; "*acanthos*," signifying a thorn; while the second order, *Malacopterygii*, have these rays invariably soft and flexible, as the term, derived from "*malacos*," soft, sufficiently indicates.

This distinction is so easily drawn, that when once mentioned it cannot be missed or overlooked by the most superficial observer; and as to one or other of these orders belongs every fish, without an exception, of which the sportsman takes cognizance—I do not of course include shell-fish—its importance is self-evident.

Of the spiny-finned fishes, though there are many families, and many species of each family, there are no great subordinate divisions.

Of the flexible-finned fishes, on the contrary, there are three strongly-defined divisions, of which the largest is that containing

The *abdominal Malacopterygii;* in all of which the two ventral fins, BB, are situate on the belly, attached to the walls of the stomach, and deriving no support from the bones of the shoulder. To this division belongs, among many others, the subject of the outline cut on page 37, the European Lake Trout; and, as a consequence, all the family of the *Salmonidæ*. The fishes of this division can be readily distinguished, on a mere external examination, by the fact that the

ventral fins, BB, are situated much farther back than in those of the next division, occupying a position nearly longitudinally posterior to the pectorals, AA; while in those to which I next proceed, they are nearly vertically below them.

The second grand division of the flexible-finned fishes consists of the *Sub-brachial Malacopterygii;* in all of which the ventral fins, BB, are placed very near to the pectorals, AA, the bones supporting the former being attached to the bones of the shoulder which support the latter. The term sub-brachial briefly expresses this formation, signifying "having lower arms"—to which human limb the reference is pointed by the connexion of the fin, in this division, to the shoulder.

The third division of the flexible-finned fishes, to which I allude rather to complete the subject, than that they fall regularly into the angler's way, consists of those designated by Baron CUVIER as the *Apodal Malacopterygii;* in all of which the ventrals are entirely wanting. To this division belong the families of *Muræniдæ*, and *Anguillidæ*, Congers, Eels, and their congeners.

First then, having noted whether the fish we desire to know more minutely has hard or flexible fin-rays, and then, having ascertained by the position of his ventral fins, if soft-finned, to which division he belongs, by examining the number and position, as well as the texture of the dorsal and anal fins, we shall speedily discover his family; or if we have no book at hand to which we can refer, we can easily so describe him by letter to some competent person, as will enable him readily to enlighten us on the subject.

To show the importance of possessing even the small degree of knowledge conveyed in these last few pages, I will merely observe that if the settlers of the shores of the Otsego had been even so far advanced in the science, they had not committed the blunder of misnaming the excellent fish of their waters, the Otsego *Bass;* when it is in truth one of the Salmon family—the former being a spiny, the latter a soft-finned family.

A few steps more would have prevented our Southern friends from the commission of the absurdity of designating a variety of Weak-Fish as Trout—two fish which have not the most remote connexion; and so on *ad infinitum*.

All the family of *Salmonidæ*, or Salmons, have *two* dorsal fins, as will be observed in the outline figure on page 37; the hinder one of which has no rays, but is merely a fleshy or fatty appendage. Had the Otsegoites known this simple fact, they would at once have perceived that their fish not only was not a Bass, but was a Salmon. And this same degree of attainment would have prevented the application of the misnomer Trout to the Weak-Fish. I have observed this very day, in the columns of a distinguished weekly journal, an offer on the part of a correspondent to describe the habits, &c., of the *Susquehannah Salmon!* There being notoriously no Salmon in that or any Southern stream, although the Brook Trout abound in its upper waters, I venture at once to predict that this Salmon will turn out to be the fish described by DeKay as *Lucioperca Americana*, and variously called Ohio Salmon and Ohio Pickerel; being neither, but a species of the Pearch family, with *one* spiny dorsal fin.

I hope these brief facts will induce sportsmen to give a little attention to this subject; and that they will not be alarmed by the harshness or apparent difficulty of a few foreign terms, nor suffer themselves to be deterred by a mere show of trouble from acquiring, in a few minutes, that which will surely give them years of gratification.

More direct instruction in regard to the mode of observation, and the point to be observed, will be given under the head of each particular fish, in the body of the work; but I will here point out that it is very well to note down the number of rays severally contained in the pectoral, ventral, anal, caudal, and dorsal fins of any fish which is suspected of being an undescribed or distinct variety; as on this, as well as on the shape of these appendages, much depends in distinguishing individual species of the same family.

I will here, in corroboration of the last remark, state in two words, that next to the arrangement of the gill-covers, of which more anon, the fact on which Yarrel relies most strongly for distinguishing the Bull-Trout, *Salmo Eriox*, from the true Salmon, *Salmo Salar*, is this, that the caudal fin of the former is convex, while that of the latter is more or less concave, or forked, in proportion to the age of the individual fish.

I shall now pass to the consideration of the gill-covers, the appa

ratus by means of which the fish breathes; in other words, by which the oxygen is separated from the water, in which the animal exists, as it enters by the mouth and passes out at the aperture of the gills, conveying its influence to the blood in its passage.

This apparatus being of course of the highest degree of importance to the animal, varies in form and structure according to the various exigencies of the different species to which it is attached; and it is therefore of great value to the observer in distinguishing one family, and even one species of the same family, from another.

With regard to the family of which we are now treating, the *Salmonidæ*, beyond all question the most important and most interesting to the sportsman, as being the gamest, boldest, and strongest of all the fish with which he has to do, and to the epicure likewise, as affording the greatest varieties of the most delicious food, the remarks I am about to make have especial application.

Of no other family known to the sportsman, are the species so numerous, and so difficult of definition; and not only the truly distinct species, but the subordinate varieties, produced in the same species by difference of food, of water, of bottom-ground in the lakes or rivers haunted by each, and even by the degrees of light or shadow which affects the localities which they haunt. These varieties, often differing by many pounds' weight, colors in the broadest sense of the word, not tints or shades of hue, quality of flesh, and shape, are by no means to be set down as distinct and permanent species; for it will be found that a transposition of these from one place to another, and even the regular course of reproduction, will bring them back to the original or normal type.

What strikes us, moreover, at first sight, as in no small degree singular, is the fact, that different varieties of one species will very frequently differ more widely from one another, and from the original type, so far as those externals which strike the mere superficial observer, than entirely distinct and immutable species.

This it is which so often leads common and vulgar-minded persons, who are in the habit of boasting that they believe their own eyes only, and resorting to other absurdities of that kind, and who will not take the trouble of connecting causes and effects, or considering logical

consequences, to disregard, and even to hold in contempt, the teachings of scientific men, as mere theoretical dreamers, useless coiners of hard terms, and founders of distinctions, founded upon no difference.

Such, I am sorry to say, is too often the habit of sportsmen; who will frequently give ear to the superstitious and absurd garrulity of some rustic ignoramus, who pronounces his absolute yea or nay upon some fact about which he is utterly ignorant, and who has no earthly qualification for judging on the qualities of the bird, beast, or fish in question, than that of having seen it so often that he ought to know something about it, which he does not; while they turn away contemptuously, or listen coldly to the teachings of the man, whose arguments are founded upon facts that cannot err, upon deductions drawn from differences of anatomical structure, permanent from generation to generation, and liable to no modification by the change of external circumstances.

This it is which renders the structure of the fins, the shape of the gills, the system of the teeth, and other matters of the same kind, which pass wholly unnoticed by the clod-hopping hunter, of all importance in distinguishing one species from another; while the size, the weight, the color and number of the spots, things to which he will point as decisive with all the pig-headed presumption of self-conceited ignorance, are of little, if any weight, as varying in individuals, and not transmitted, like to like, through generations.

Almost all the really distinct species of the *Salmonidæ* are distinguished principally one from another by the form of the head and the structure of the gills in the first degree, and by the dental system in the second. Any permanent and unvarying difference in these, coupled to other variations of color, form, habit, or the like, which might otherwise be deemed casual, being held sufficient to constitute a distinct species.

Many discoveries have been made through these means of late years; many varieties, which were formerly supposed to be truly distinct, having been proved to be identical; and many new species discovered —the tendency of the whole having been to simplify, and to diminish the number of species, in the upshot, and thereby to decrease the labors of the student, and to facilitate the acquisition of science.

Much, however, yet remains to be done, as will be rendered evident by the consideration that, even in so circumscribed a territory as Great Britain, every water of which has been explored, and, it may be presumed, almost every fish submitted to the examination of scientific men, great doubts yet exist concerning many forms, especially of this family of *Salmonidæ*, whether they are absolutely distinct, or merely casual varieties, incapable of reproduction.

In this country, with its boundless lakes and gigantic rivers—all those to the northward and eastward, and all those feeding the tributaries, or lying in the vast basin, of the St. Lawrence, as well as all those on the western or Pacific coast, flowing down through the Sacramento and Columbia, or wasting in the arid sands or wet morasses of the Great Central Basin, all teeming with varieties, perhaps distinct species of the Salmon—what a vast, what an unexplored field for the sportsman, the naturalist; and how doubly charming for him who unites in one individual both capacities. But two distinct varieties of the American Lake Trout, or at the most three, are as yet made out—for I think it doubtful whether there be any positive grounds on which to establish a distinction between the *Salmo Confinis* of DeKay, known in the Eastern States and New York as the common Lake Trout, and the *Salmo Amethystus* of Mitchil, known as the Mackinaw Salmon. The *Salmo Siskawitz* of Agassiz, discovered in the course of the past summer in lakes Superior and Huron, is clearly a marked and permanent species. That there is yet one other distinct species, the Sebago Lake Trout, I fully believe, but only having heard of it by oral description, I dare not take upon myself, without examination and comparison, to decide the question.

Again; another huge fish is constantly mentioned as taken at times in the lakes of Hamilton county, in New York, which, if it be not, as I believe it is, a gigantic casual variety of the common Brook Trout, *Salmo Fontinalis*, is certainly a distinct fish.

A slight examination of the gills, teeth, and fins, will at once settle this point.

Of the common Trout, but one species is as yet firmly ascertained, unless the Red-bellied Trout, *Salmo Erythrogaster*, of DeKay, prove to be a distinct form; which I, for one, do not at all believe. The Troutlet of that author is merely the young of the common Trout.

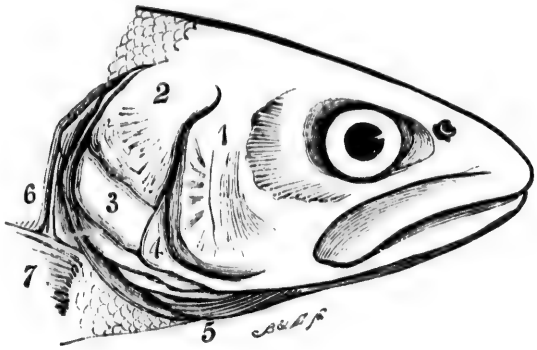
Whether there exists a Salmon Trout or Silver Trout, *Salmo Trutta Marina*, at all in American waters, apart from the Salmon-peal, Grilse and common Trout, having access to salt-water, likewise remains to be proved, by the aid of those easy methods of examination, the use of which I so earnestly desire to impress upon my friends and fellow-sportsmen, not merely as an aid to science, but as an immense addition to their own individual gratification, when in pursuit of their finny prey by the wild margin of some far woodland lake, or on the rocky borders of some lone torrent of the wilderness.

That many new species, entirely unsuspected and undescibed, still remain to be found and recorded in our waters, I hold to be undoubted; when they will be discovered, or by whom, is another question; for I regret to say it, as yet the spirit of science, and the desire to facilitate and assist the inquiries of the man of letters, has scarcely penetrated the breast of the American sportsman; and while, in England and on the European Continent, many the most distinguished correspondents of the literary and scientific institutions of those lands are sportsmen, who have contributed most highly to the advancement of knowledge by their investigations, experiments and contributions, we can, on this side, alas! point to but two or three of the sporting fraternity who have cared to record themselves as anything more than killers of animals; of the habits, characteristics, and even names of which they are but too often grossly ignorant.

A few there are, it is true, who aspire to higher things, and who are actuated by something more than the mere love of killing, the mere ambition of boasting of bag; and among these, may their number increase daily! it will not, I hope, be deemed impertinent to specify the author of "The Birds of Long Island," who, from a sportsman of no secondary skill or energy, has successfully aspired to the honors of a naturalist; and has most deservedly acquired, as such, no small degree of celebrity and favor.

From this short excursion, into which I have been naturally led in the course of my subject, I return to the description of the gill-covers of fish, and thereafter to the dental system, the method of comparing which I shall lay down briefly for the use of the learner, and then proceed at once to the history of sporting-fishes.

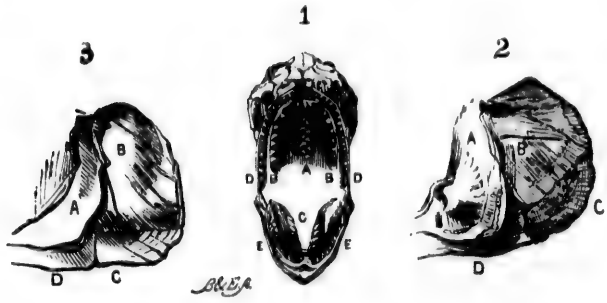
The subject, which I now present, is the head of the Silver Trout of Europe, *Salmo Lacustris*, a species found in the large lakes of that continent. The figure is copied, by permission, from Professor AGASSIZ' great work on the "Fresh-water Fishes of Central Europe."



The gill-covers of all the fishes of the three first divisions, with which alone we have to do, consist of four principal parts, and their use is to close the aperture behind the gills, which in all these three divisions is so formed, and so freely or loosely suspended, that the water bathes in its passage every part of their surface.

These parts are, the *pre-operculum*, or fore-gill-cover, No. 1; the *operculum*, or gill-cover proper, No. 2; the *sub-operculum*, or under-gill-cover, No. 3; and the *inter-operculum*, or intermediate gill-cover, No. 4. The *branchiostegous* rays, as they are termed, are indicated by No. 5; and the fixed plates, forming the posterior immovable margin of the gill-covers, by No. 6. N. 7. indicates the pectoral fin.

How widely these parts differ in form, in different species of the Salmon tribe, will become at once apparent by a comparison between the gill-covers in the figure above, and those of the true Salmon, *Salmo Salar*, and the Bull-Trout, *Salmo Eriox*, Nos. 2 and 3, on the following cut, which, with these, presents a view of the interior of the mouth and the dental system of the common Trout, *Salmo Fario*, of Great Britain.



In figure 2 of this cut, representing the gill-cover of the true Salmon, it will strike any casual observer that the hinder margin of the whole covering forms nearly a semicircle, while that of No. 3, the Bull Trout, approaches more nearly to a rectangular figure. In the former, the *pre-operculum*, fore-gill-cover, A, differs from the same part, similarly marked, in No. 3, it being more rectilinear; while the *operculum*, gill-cover proper, B, of the former slopes hindward and backward; the same portion, B, in No. 3, cutting in a horizontal line upon the joints of the *sub-operculum* and *inter-operculum*.

And in all respects both differ entirely from the arrangement of the same parts in the head of the Silver Trout, exhibited in the cut last preceding at page 45.

The most striking consequence of these differences is, that a straight line, drawn backward from the front teeth of the upper jaw, the mouth being closed, to the longest posterior projection of the gill-cover, will, in the three fish, run at a totally different angle to the horizontal line of the body; and will occupy an entirely different situation in respect to the eye; such a line in the head of the Salmon, *Salmo Salar*, and in the Silver Trout, *Salmo Lacustris*, passing close below the orbit of the eye; while in that of the Bull Trout, *Salmo Eriox*, it will run obliquely very far below it.

This distinction is very easy of observation, and is extremely important in the definition of species; as indeed is everything connected

with the form and peculiarities of the head, not forgetting its relative proportion to the entire length of the body.

Of no less value is the arrangement of the teeth in the different classes, families and species of fish; there being, on this point, infinitely greater variety than can be imagined by persons who have given their attention only to the structure of quadrupeds.

"The teeth," says Mr. YARREL, in the introduction to his fine work on British Fishes—from which I have taken the liberty of borrowing the last cut, descriptive of the gill-covers and dental system of the Salmon, Bull-Trout, and common Trout—"of fishes are so constant, as well as permanent in their characters, as to be worthy of particular attention. In the opinion of the best ichthyologists, they are second only to the fins, which in their number, situation, size and form, are admitted to be of first-rate importance.

"Some fishes have teeth attached to all the bones that assist in forming the cavity of the mouth and pharynx, to the intermaxillary, the maxillary, and palatine bones, the vomer, the tongue, the branchial arches supporting the gills, and the pharyngeal bones. Sometimes the teeth are uniform in shape on the various bones, at others differing. One or more of these bones are sometimes without teeth of any sort; and there are fishes that have no teeth whatever on any of them. The teeth are named according to the bones upon which they are placed; and are referred to, as maxillary, intermaxillary, palatine, vomerine, &c.—depending upon their position.

"A reference to page 46, will show the situation of the teeth in the Trout, with five rows on the upper surface of the mouth, and four rows below; the particular bones upon which these rows are placed, are also referred to."

Mr. YARREL then proceeds to descant, somewhat too largely for extraction in a work of this description, on the form, position and uses of the various teeth in different families of fishes; but the gist of his remarks I prefer combining under the heads of the various fishes to which they belong; and I shall only add here, that in some species the teeth are arranged as in the *Salmonidæ*, in duplicate or triplicate rows of single teeth; in others in dense patches, occupying sometimes the greater part of the palate, set like the bristles on a shoe-brush, as in the *Esocidæ* or Pike family; and again in others, as the species

Labrax, of the family *Percidæ*, to which belongs our own noble Striped Bass, they cover the whole tongue, besides being thickly set on the palate.

The position and shape of these teeth indicate as clearly the habits, mode of feeding, and the food, of the various families to which they belong, as do the teeth of the carnivorous, ruminating, or gnawing quadrupeds inform the naturalist whether the creature, of which the jaw-bone only lies before him, fed on animal substances, on grass, on grain, or on the bark and hard-shelled nuts of trees; or as the beaks and bills of birds tell the experienced looker-on whether the owner was a bird of prey, an insect-eating warbler, or a grain-cracker.

The distinction, therefore, which is founded upon the difference of the teeth in different fishes, is by no means fanciful, or resorted to merely to enable naturalists to display their ingenuity in making definitions, and multiplying species, as many people stolidly imagine; but is real and permanent, as representing the great sub-divisions of the dwellers of the waters, as those which feed on living, those which feed on dead animals of their own species, as insect-eaters, or masticators of hard shell-fish, and so forth, unto the end. Differences, which even the most bigotted enemy of scientific distinctions must admit to be as real, and true in nature, as those between the tiger and the wolf, the ox that chews his cud, and the horse which fattens at the manger.

I have known a sage coroner in England, who was wont to indulge in sapient ridicule of the learned professions, and to sneer at anatomical and physiological distinctions, who gravely sat in inquest over some exhumed bones, and solemnly recorded a verdict of wilful murder against some person or persons unknown, the skeleton, when examined, turning out to be that of a defunct cow.

Such instances are becoming, I am happy to say, rare, as regards men in general, and those sciences which regard the human race, and domestic animals. Why it should not be so with the sportsman, I know not; but too true it is, that most of that fraternity obstinately adhere to ancient error, even when it is clearly pointed out; and attempt to ridicule the man of letters as a mere theorist, and unpractical, for attempting to correct them in their blunders of nomenclature, whereby they confuse all the tribes of the earth, the

air, and the water, and all the things that have life, whether animal or vegetable, therein.

Little are they aware how fantastic are the tricks which they play, "like angry apes before high heaven," in the eyes of all those, whether naturalists or sportsmen, who do not confound conceit with knowledge, or wit with impertinent vulgarity.

I shall now proceed to a few observations with regard to the figure No. 1, in the last wood-cut, on page 46, which represents the interior of the mouth, opened to the utmost, of the common Trout of Great Britain and the European continent, *Salmo Fario;* which is selected by Mr. YARRELL as "showing"—to borrow his own words—"the most complete series of teeth among the *Salmonidæ;* and the value of the arrangement, as instruments for seizure and prehension, arising from the interposition of the different rows, the four lines of teeth on the lower surface alternating, when the mouth is closed, with the five rows on the upper surface, those on the vomer shutting in between the two rows on the tongue," &c.

In this cut, letter A represents the situation of the row of teeth that is fixed on the central bone of the roof of the mouth, called the vomer, from some fancied resemblance to the share of a plough, for which the word used is the Latin term; BB, refer to the teeth on the right and left palatine bones; C, to the row of hooked teeth on each side of the tongue; DD, to the row of teeth outside the palatine bones, on the upper jaw, which are those of the superior maxillary bones; and EE, to the outside row on the maxillary bones of the lower jaw.

Now it will readily be understood what is the importance of examining carefully this system of teeth, in the different varieties of the salmon family, whether called Salmon, Salmon Trout, Lake Trout, Brook Trout, or any other local name whatsoever; when it is stated that the distinct species are very strongly and permanently indicated by the number of teeth found in each upon the vomer, central bone of the roof the mouth.

In the true Salmon, the teeth on the vomer very rarely exceed two; and sometimes there is but one.

In the Bull-Trout, the teeth are longer and stronger than those of the true Salmon; but, like that fish, he has but two, or at most three teeth on the vomer; he is distinguished, according to the authorities,

by the different formation of his gill-covers, and the convex form of his caudal fin, whence he is said to be termed the Round-tail in the river Annan, in Scotland. This fish is unknown in America, and is merely mentioned for the sake of example and illustration.

In the Salmon Trout of Great Britain, *Salmo Trutta Lin.*, a migratory fish, growing to a very large size, the teeth extend nearly the whole length of the vomer, thereby establishing a distinction between this and the two aforenamed species.

Of the common Trout, we have already seen the dental arrangement. In the two distinct varieties of Lake Trout, recognised by authorities in Great Britain, which are non-migratory, and analogous to our Lake Trout; viz—

In the Great Gray Trout, or Loch Awe Trout, *Salmo Ferox*, which is common to most of the large Scottish and Irish inland waters, and which is pronounced by Mr. AGASSIZ to be distinct from any of the continental Lake Trout,—these teeth extend along the whole length of the vomer.

And in the Lochleven Trout, *Salmo Levenensis, sive Cœcifer*, WALKER and PALMER, if it be a distinct species from the common Trout, *Salmo Fario*, as appears to be conceded—although I must say I doubt it, as I do the Gillaroo, which, however, is more doubtful—there are thirteen teeth on the vomer, extending through its whole length.

It would be well, indeed, if American anglers would take a little pains about the examination of these points, and would note them down in their tablets—in which, doubtless, they insert the weight of their captives—together with the relative proportion of the length of the head to that of the entire body; the form of the gill-covers; and relative position of the eye to a line drawn from the front teeth to the lower posterior angle of the operculum or suboperculum, as it may be; the number of rays in each of the several fins; and especially the form of the caudal fin-tail—whether forked, concave, square, or convex.

A very few memoranda on such points as these, accurately recorded, and assisted, where practicable, by the roughest sketch, would be of greater utility to the cause of science, than can be readily imagined; and we should undoubtedly soon arrive at facts of great importance, and perhaps discover some new and interesting species of this most interesting family.

At all events, we should not be tantalized by information so vague and indefinite as that conveyed in a note to the appendix, contributed by the members of the Piseco club to Dr. BETHUNE, for the beautiful and valuable edition of Walton's Angler recently given to the American world—with notes on American fishing, the only fault of which is their brevity—by that accomplished fisherman and erudite scholar, who takes no shame to be held a follower of the gentle art, and to possess the finest piscatorial library owned in the United States, whether by private individual or collective body.

"In June of this year," says the note to which I have reference, "the president of this club killed a *red-fleshed* Lake Trout of 24 lbs. weight!" And no more!

Information of the same kind has been given to me by Mr. C. WEBBER, the author of some pleasant letters on Hamilton County Fishing, published during the past year in the columns of the New York Courier and Enquirer; but, unfortunately, none of the fortunate takers have noted any points relative to this fish, on which any deliberate opinion can be formed.

The flesh of the ordinary Lake Trouts of America, *Confinis*, *Amethystus*, and *Siskawitz*, are all pale, dingy, yellowish buff, tasteless, coarse, muddy, and flaccid.

It seems to be admitted that the red-fleshed Lake Trout is of more brilliant external coloring than the common variety.

This is the fish of which I have spoken at page 43, as being unquestionably a distinct species, if not an overgrown and gigantic variety of the Brook Trout, *Salmo Fontinalis*. This latter, I believe to be the case; though it is impossible to pronounce positively, without seeing the fish, and instituting careful comparison.

The fishermen of that district, on the lake, assert, I understand, positively that this is not the case; but of course their opinion is utterly valueless, being founded on some such admirable reason as that the Brook Trout never grows to be above five or six pounds; meaning only that they have never seen what they take to be one over that average. Just in the same manner, a person used to take fish only in the small mountain brooks of Maine, New Hampshire, or Vermont, might tell you quite as plausibly, quite as positively, and quite as truthfully—so far as his miserable experience of truth goes—that the

Brook Trout never grows to be above half a pound—nor does it in his waters.

The common Trout of England, *Salmo Fario*, which is so closely connected with our Brook Trout, *Salmo Fontinalis*, as to be constantly mistaken for it by casual observers, is continually taken in the larger rivers, especially the Thames, and in some of the Irish waters, from ten to fifteen pounds in weight. Mr. YARRELL, when preparing his British Fishes, had a minute before him of six Trout taken in the Thames, above Oxford, by minnow-spinning, which weighed together fifty-four pounds, the largest weighing thirteen pounds; and one is recorded in the transactions of the Linnæan Society as having been taken on the 1st of January, 1822, in a little stream ten feet wide, branching from the Avon at the back of Castle-street, Salisbury, which on being taken out of the water was found to weigh twenty-five pounds.

These instances, which are beyond dispute, in relation to a species so closely related to our fish as the *Salmo Fario*, render it anything but improbable that it too, in favorable situations, should grow to an equal size; nor is there any reason for doubting it, since it is known to grow to the weight of five or six pounds, within a few ounces of which latter weight I have myself seen it; and there is no natural or physical analogy by which we should set that weight as the limit to its increase.

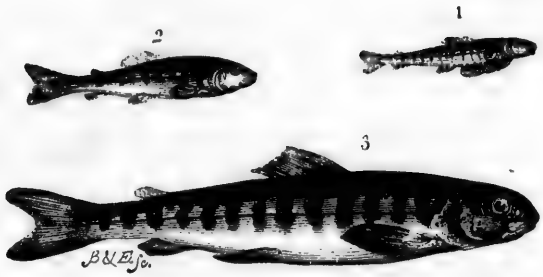
Should these remarks call the attention of sportsmen to a matter of deep interest, and elicit from them occasional records of examinations, which none can institute so well as they, their end will be fully answered, and these pages will not have been thrown away.

We now come at once to the history of this family, and first, as best, to that of the true Salmon.

This being the noblest and most game in its character of all fishes, as I have observed before, once abounding in all waters eastward of the Hudson, and still, though it has now ceased to exist in numbers, west of the Penobscot, and even there can be rarely taken with the fly, is still the choicest pursuit of the American angler, although he may be now compelled to seek it in the difficult and uncleared basins of the Nova Scotian rivers; in the Northern tributaries of the huge St. Lawrence; or yet farther to the Westward, in the streams of the Columbia and the cold torrents of Oregon, all of which contain the

true Salmon, with many other noble and distinct varieties, in unequalled numbers.

Of this glorious fish, of its generation, migrations, growth, and habits, so much has been discovered within, comparatively speaking, a few years, that I am enabled to present a considerable number of facts, which will be doubtless new to many of my readers, and which may be received as ascertained and authenticated beyond the possibility of doubt.



SALMON PINKS, up to six months old.

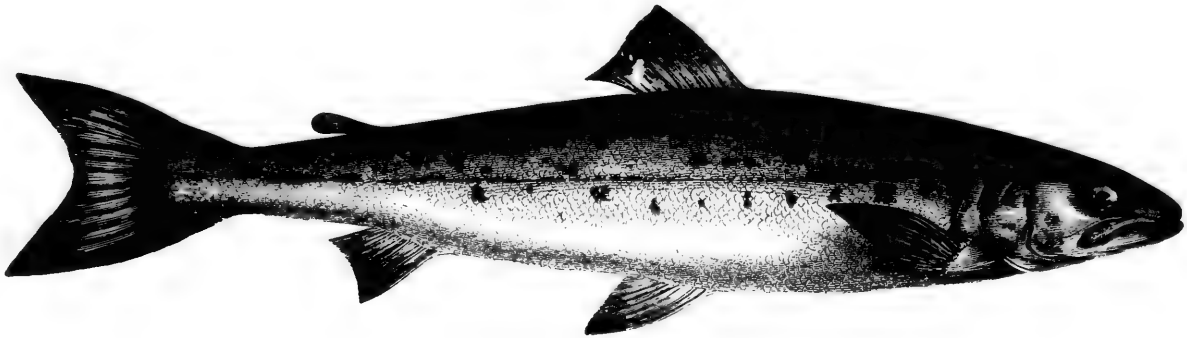
THE SALMON.

THE COMMON SALMON, THE TRUE SALMON.

PINK, *first year*, SMOLT, *second year*, PEAL or GRILSE, *second autumn.*—*Salmo Salar*, AUCTORUM, British Fishes, vol. ii. p. 1. DeKay, vol. iv.

ALTHOUGH this noble fish has never been made the subject, so far as I know, of any of the strange and monstrous fables which have obtained concerning many others of the inhabitants of the waters—as for instance the Pike, of which old Izaak tells us, "it is not to be doubted, but that they are bred, some by generation, and some not, as namely, of a weed called pickerel-weed, unless learned Gessner be much mistaken; for he says, this weed and other glutinous matter, with the help of the sun's heat, in some particular months, and some ponds adapted for it by nature, do become Pikes"—still, until within the last few years, very little has been known with certainty concerning him in his infancy, and during the earlier stages of his growth.

"The salmon," says Izaak Walton, "is accounted the king of fresh-water fish, and is ever bred in rivers relating to the sea, yet so high or far from it as to admit no tincture of salt or brackishness. He is said to breed or cast his spawn, in most rivers, in the month of



THE SALMON. SALMO SALAR.

A FEMALE FRESH RUN FROM THE SEA.

ON WOOD BY H.W. HERBERT.

August; some say that then they dig a hole or grave in a safe place in the gravel, and there place their eggs or spawn, after the melter has done his natural office, and then hide it most cunningly, and cover it over with gravel and stones; and there leave it to their Creator's protection, who, by a gentle heat which he infuses in that cold element, makes it brood and beget life in the spawn, and to become Samlets early in the next spring following."

This passage I have quoted because in several respects it approaches very nearly the truth, as it has been proved by the result of a series of well-conducted experiments, to which I shall again allude.

The true Salmon is caught in the estuaries of our large northern and north-eastern rivers, on his way up to deposit his spawn in the last months of spring and the early part of the summer. It has been observed in Europe, that those rivers which flow from large lakes afford the earliest Salmon, the waters having been purified by deposition in the lakes, while those which are swollen by melting snows are later in season.

It is also observed that the northern rivers are the earliest; and it is stated by Artedi, that in Sweden, Salmon spawn in the middle of the summer. The causes influencing these facts are not yet decided nor are they easy of solution, says Sir William Jardine, especially where the time varies much in the neighboring rivers of the same district.

I am not aware that any difference of this kind has been remarked in this country; and the great lack of residents on the remote Salmon rivers who will trouble themselves to observe and record such facts as daily occur under their eyes, renders it very difficult to obtain such information as might assist one in coming to any conclusion.

So far as I can judge, however, this difference does not occur on this part of this continent at least; nor do I believe that the Salmon are earlier in their appearance in the St. Lawrence, which flows through the largest chain of fresh-water lakes in the world, than the St. John's, or the Penobscot, which lie farther to the south, and have no lakes of any magnitude on their waters. It must be mentioned, however, here, that all these rivers are equally swollen by melting snows; and that, being frozen solidly until late in the spring, the period of their opening naturally connects itself with the appearance of the fish.

The Connecticut river, which has no large lake on its course, and is the southernmost of all the rivers which have furnished Salmon for many years past, has ceased to be a Salmon river; or some facts might have been ascertained through observation of its waters. The Kennebec also, though formerly an unrivalled Salmon river, is becoming yearly less productive of this fine fish. I am inclined to think, however, that it is the earliest Salmon river on this side of the American continent; with the Arctic rivers I have of course nothing to do; and of the rivers or natural productions of California, Oregon, and the Pacific coast, we shall know nothing on which reliance can be placed, until the gold-hunting hordes are replaced by a stationary and organised population.

The mouth of the Kennebec is about one degree to the southward and westward of the Penobscot, and flows out of a large sheet of water, Moosehead lake, which abounds in the common Lake Trout, growing to a very large size, the *Salmo Confinis* of DeKay. I presume that the true Salmon no longer has the power of making his way up to the head-waters of this beautiful and limpid stream, in consequence of the numerous and lofty dams which bar its course; but of this I am not certain.

The Salmon enters our rivers, then, rarely before the middle of May, and is taken in their estuaries so late as the end of July; and during the early part of the season, nearly indeed until the latter date, does not ascend far above tide-water, generally going up with the flood, and returning with the ebb. At this time they are taken by thousands in stake-nets, on the Penobscot and other eastern rivers, and sent thence, packed in ice, to the markets of all the larger cities of the United States.

At the time of their first entering the fresh-water, when they are in the highest possible condition, in the greatest perfection of flesh and flavor, and at the height of external beauty, they are of a rich transparent blueish-black, varied with greenish reflections along the back, these colors gradually dying away as they approach and pass the lateral line, below which the belly is of the most beautiful glistening silvery whiteness. The dorsal, caudal, and pectoral fins, are dusky black, the small fatty second dorsal fin bluish-black, the central fins white on the outer side, but somewhat darker within, and the anal fin silvery white, like the belly.

There are generally a few dark spots dispersed along the body about the lateral line; and in the female fish these are more numerous and conspicuous than in the males.

The accompanying cut, facing page 54, is of a female, fresh run from the sea, and is copied, by permission, from the figure by Sonrel, in Mr. Agassiz's great work alluded to above. The individual from which the figure is taken, was caught in the neighborhood of Havre-de-Grace, in France; but the Salmon of the two continents are identical.

I will here observe, *en passant*, that whenever it has been in my power to obtain specimens, either living or in spirits, I have myself drawn the figures from nature on the wood; but where, from the season of the year, or other causes, I have been unable to obtain that advantage, I have copied my illustrations from the best authorities, where I could find plates or drawings which I deemed satisfactory. In the absence of either, I have left the fish unrepresented, in preference to giving incorrect caricatures of the animal—such as disgrace too many works of natural history, and, I am sorry to say, among others, the great Natural History lately published by the State of New York, the illustrations of which are below contempt as works of art, and, in a scientific view, utterly useless, and uncharacteristic.

After they have gained the upper and shallow parts of the rivers, preparatory to the deposition of their spawn, the colors of the Salmon are materially altered; the male becomes marked on the cheek with orange-colored stripes, the lower jaw acquires a peculiar projection, and turns upward at the point in a hard, hooked, cartilaginous excrescence, which, when the mouth is closed, occupies a hollow between the intermaxillary bones.

The body of the fish becomes greenish above, with the sides of an orange hue, fading into yellowish-green on the belly, and the spots assume a sanguine hue, the dorsal and caudal fins being more or less spotted. The females at this season are even darker than on their arrival in fresh water.

The males are at this period termed Red-fish in Great Britain, and the females Black-fish; and they are so designated in the very salutary enactments which, in that country, by protecting the fish during their

season of breeding, have preserved them from extirpation; enactments which, as cannot be too much regretted or too strongly reprobated, the recalcitrative and over-independent spirit of our people will not tolerate, much less obey.

The time will come, when the population at large will deplore this foolish and discreditable spirit; when, like him who slew the goose which laid the golden eggs, they find that by their own ultra-democratic spirit, they are deprived entirely and forever of a great source of national pleasure, as well as national profit and wealth—for such are the fisheries of a country.

During the winter the fish go through the process of spawning, which is thus described by Mr. Ellis, in his "Natural History of the Salmon," as quoted by Yarrel in his "British Fishes:"

"A pair of fish are seen to make a furrow, by working up the gravel with their noses, rather against the stream, as a Salmon cannot work with his head down stream, for the water then going into his gills the wrong way, drowns him. When the furrow is made, the male and female retire to a little distance, one to the one side, and the other to the other side of the furrow; they then throw themselves on their sides, again come together, and rubbing against each other, both shed their spawn into the furrow at the same time. This process is not completed at once; it requires from eight to twelve days for them to lay all their spawn, and when they have done they betake them to the pools, and descend to the sea, to refresh themselves."

At this time they are lean, out of condition, and unfit for food. Meanwhile, the female has acquired a grayish color on the back, with bright yellow sides. She is covered above the lateral line, including the dorsal and caudal fins, with alternate dusky and ruddy spots. Her pectoral, ventral, and anal fins are of a bluish gray color. She is now a long, lank, big-headed, flat-sided fish, as unlike as possible to the beautifully-formed glistening creature which ran up the stream in the preceding autumn.

She is now termed properly a baggit, and the male a kipper; and the two, generally, kelts.

Before entering the salt-water, they linger awhile in the brackish water of the tide-ways, as they did on ascending the rivers, obtaining,

it is said, thereby a release from certain parasitical animals, generated, these by the fresh, those by the salt water, at each change of waters.

In Great Britain, the period of the Salmon's spawning varies from November to the end of January. They have been carefully watched during the whole process, as have the eggs after their deposition, so that the length of time which it takes them to attain to maturity is accurately known. This time has been ascertained by Mr. Shaw, in a series of experiments, of which I shall have occasion to speak more fully hereafter, to be about

114 days, when the temperature of the water is - -	36°
101 days, - - - - - -	43°
90 days, - - - - - -	45°

These experiments were performed in the open air, and in natural streams, liable to the ordinary influences of the atmosphere and weather.

Dr. Knox, however, as is recorded in the Transactions of the Royal Society of Edinburgh, observed a pair of Salmon which completed their spawning, and covered up their ova with gravel, in the usual way, on the 2d of November. This was in one of the northern tributaries of the Tweed.

On the 25th of February, or at the end of one hundred and sixteen days, the ova were dug up, and found unchanged. On being removed, however, at this stage, and placed in bottles of water in warm rooms, the eggs were matured almost immediately, and the young fry hatched. In this state they can be preserved in the bottles, with the water unchanged, for about ten days, as during that time they are supported on the yolk of the egg which adheres to the under part of their bodies, as exhibited in figure 1 on the cut at the head of this article.

On the 23d of March, according to Dr. Knox, the ova began to change, and it was not until the 1st of April that the fry were found to have quitted the beds.

Mr. Shaw's experiments were, however, so conducted as to furnish data on which more reliance may be placed; and as these are of the greatest interest, and as from experiments similarly conducted, farther results of a different kind might be attained, of surpassing importance, I shall state them somewhat at length.

A full account will be found, by those who desire to investigate the subject more thoroughly, in the Edinburgh New Philosophical Journal for July, 1836, and January, 1838.

Mr. Shaw, it seems, caused three ponds to be made, of different size, at about fifty yards distance from a Salmon river, the Erith, the ponds being supplied by a stream of spring-water, well furnished with the larvæ of insects. The average temperature of the water in the rivulet was rather higher and less variable than of that in the river; otherwise the circumstances of the ova contained in the ponds, and of the young fry produced therefrom, were precisely similar to those of the spawn and fry in the river.

These ponds were all two feet deep, with well-gravelled bottoms, the highest pond eighteen feet by twenty-two, the second eighteen by twenty-five, the third thirty by fifty.

Observing two Salmon, male and female, in the river preparing to deposit their spawn, Mr. Shaw prepared in the shingle, by the stream's edge, a small trench, through which he directed a stream of water from the river, and at the lower extremity of the trench, placed a large earthenware basin to receive the ova. This done, by means of a hoop-net he secured the two fish which he had observed; and placing the female, while alive, in the trench, forced her, by gentle pressure of her body, to deposit her ova in the trench. The male fish was then placed in the same position, and a quantity of the milt being pressed from his body, passed down the stream, and thoroughly impregnated the ova, which were then transferred to the basin, and thence to the small stream which fed the upper pond, where they were covered up in the gravel as usual. The temperature of the stream was 40°, that of the river 36°. The skins of the Salmon were preserved, in order to prevent the possibility of doubt or cavilling concerning the species The male fish, when taken, weighed sixteen, the female eight pounds

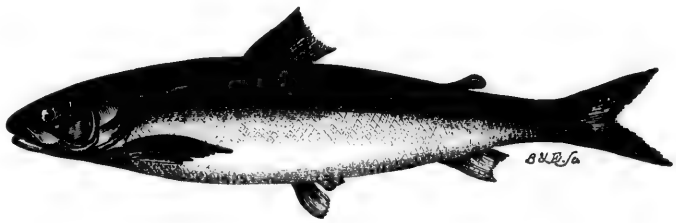
The result was, that the young fish were hatched, as I have stated in the scale above given. When first emerging from the membrane in which it had been enclosed, with the yolk adhering to the abdomen, the young fry is as it is shown in No. 1, of the cut referred to above. The yolk is absorbed in twenty-seven days, after which the young fish require nourishment. At the end of two months, the young fish has attained the length of an inch and a quarter, as represented at

No. 2; and at the age of six months, he has grown to the size of three inches and a quarter, and, except in dimensions, is exactly rendered in No. 3 of the above cut.

From these facts we arrive at two consequences. First, that the growth of the young Salmon has been greatly overrated; and, secondly, that at a certain period of its life the Salmon *is* a Parr. The extent to which the growth of the Salmon has been overrated, will be perceived at once, when it is shown that Dr. Knox, in the paper from which I have already quoted, states that the fry which emerged from their capsules on the 1st of April, were taken, on the 22d of the same month, in the same year, as Smolts, with the fly, of the size of the little finger.

It was also generally believed that the fry of the year descended to the sea that very spring, and returned, in the autumn, grilse, varying from two to seven pounds weight.

It is distinctly shown, however, by Mr. Shaw, that the young Salmon, which is called a Pink while in the state represented above, having perpendicular lateral bars or markings of a dusky gray color, which were once supposed to be peculiar to the Parr, does not become a Smolt, or go down to the sea until the second spring, tarrying a whole year in the fresh water.



SALMON SMOLT, one year old.

The fish here represented measured seven inches and a half in length, and three inches and one-eighth in circumference.

Its gill-covers were silvery, marked with a dark spot; belly and sides, up to the lateral line of the same, silvery color; back and sides,

down to the lateral line, dusky, inclining to green; sides above the lateral line marked with dusky spots; along the lateral line, and both a little above and a little below it, several dull obscure red spots. The dorsal fin has twelve rays, marked with several dusky spots; the pectoral fin has twelve rays of a dusky olive color; the ventral fin eight rays of a silvery white; and the anal fin ten rays of the same color. When the scales were carefully taken off with a knife, the obscure red spots became of a fine vermillion, and were nineteen in number; and ten obscure oval bars of a dusky bluish color appeared, which crossed the lateral line. In a young fry which has not acquired the scales, these bars are very distinct.

The above cut and description are both borrowed from Yarrel's "British Fishes," the latter as quoted from Dr. Heysham's catalogue.

To render these facts yet more certain, in the autumn of 1835, Thomas Upton, Esq., of Ingmere Hall, near Kendal, began to enlarge a natural lake on his property, and in the spring of 1836, some pinks from the Lune, a Salmon river in that vicinity, were put into it.

This lake, which is called Lilymere, has no communication with any other water, by which the fish once introduced can get out, or any fry, from other waters, get in. The pinks, when put in, were certainly not above two or three ounces each in weight. Sixteen months afterward, a friend of Mr. Upton's being on a visit to him, caught with a red palmer fly two Salmon Peal, in excellent condition, silvery bright in color, measuring fourteen inches in length, and weighing fourteen ounces; one was cooked and eaten, the flesh pink in color, but not so red as those of the river, well-flavored, and like that of a Peal.

In the month of July, 1838, eleven months after, another small Salmon was caught, equal to the first in condition and color, about two inches longer, and three ounces heavier. No doubt was entertained that these were two of the pinks transferred to the lake in the spring of 1836, the first of which had been retained sixteen months, and the latter twenty-seven months, in fresh-water.

Farther than this, it was found that, in the river Hodder, the pinks in April are rather more than three inches long, and that at the same time smolts of six and a half are also taken, with the colors altered as above, and ready to migrate. In July, the pink measures five inches, and the smolts have then left the river.

Dr. Knox seems to have erred merely in supposing that the pinks, the size of the little finger, were from the ova hatched in April, when they were probably from an earlier hatching of fish, which spawned at a more remote date.

It seems, however, to be clearly and certainly established by these experiments, that the smolt, or laspring, as they are sometimes called, which descend the rivers every spring toward the middle of May, are a whole year older than the pinks, which are taken in the same waters, at the same time, and by the same fly.

With regard to the later growth of the Salmon, I am not of opinion that the lake experiments prove much, if anything, either *pro* or *con;* since it is a known and established fact, that salt-water has a recuperative influence upon the mature fish which run down the rivers exhausted by spawning, and also a certain tendency to increase the growth of the young fish which descend the streams, smolts, as it now appears, in their second year, of six or seven inches length, and about as many ounces weight, and return peal or grilse, varying from two to eight pounds.

It must be observed here, that grilse is the correct name of the fish on its return from the sea in its second season, and that *peal* is merely a fishmonger's term for a small grilse not exceeding two pounds' weight.

That the identical smolt of six or seven ounces do return, after two or three months' absence in the sea, as grilse of as many pounds' weight, is proved beyond all dispute; smolts innumerable having been taken, marked with numbered tickets of zinc attached to the rays of their dorsal fins, set at liberty, and recaptured *grilse*, varying from two to eight pounds, in the autumn of the same year. The same experiment, with the labels unremoved, shows that the same grilse, descending the stream of unincreased magnitude in the spring of his third year, returns in that third autumn a fish of sixteen, and upward to twenty-five, pounds' weight.

I hold, therefore, that the argument is conclusive, so long as it is founded on a comparison between fish which, whether they be confined or at large, never visits the sea. Beyond that the analogy ceases. It remains to be seen whether the Salmon confined to freshwater will ever attain the size of those which run to and fro, from the fresh to the salt; I greatly doubt it; and, with Mr. Yarrel, I think it

more than a dubious point, whether the fish, so stopped from migration to the sea, will ever acquire power to reproduce their own species.

It is a singular fact, that the Salmon propagates its kind before it is adult—the grilse, on its return from the sea in its second year, having the roe and milt far advanced, and spawning that same autumn. The ova in the grilse differ not in size, but in number only, from those of the adult Salmon of a year's later growth, and there is no known difference between the fry of the young and full-grown fish.

It will prove to be the fact, I have no doubt, that in this country these fish spawn earlier in the season than in Great Britain; indeed, they must do so, for in the month of January the head-waters of the rivers which they frequent are masses of solid ice; and I presume it will be found that the ova are deposited and covered with gravel in the months of September and October, and in all probability that the parent fish return to the salt-water the same autumn, or early in the winter, before the closing of the rivers. This is, however, little important.

I now come to the second point, proved beyond all doubt by these experiments; *videlicet*, that the Salmon, in the first stage of his existence, is, to all intents and purposes, what is commonly called a Parr.

Most, if not all, of my readers, are probably aware that, in some particular streams of Great Britain, there has been found invariably a small fish of the Salmon family, never attaining to any considerable size or weight, and distinguishable from Trout only by the presence of the bluish gray, or olive, transverse bands alluded to above, and figured in the cut of Pinks, at the head of this article; as also again in the plate at the head of that on the Brook Trout, *Salmo Fontinalis*, next following.

Concerning this little fish, there has been a continual doubt, and a dispute of many years' standing, some persons maintaining that it was a distinct, and reproductive species of the *Salmonidæ*, which they termed variously Parr, Samlet, Brandling, and so forth. Others, from its never being taken of any size, have believed it to be an unproductive cross, or mule, between the Salmon and the common Trout, the sea Trout and common Trout, &c., &c.; and others yet again, that it was neither more nor less than a young Salmon.

In proof of this, it was adduced that Parr had been marked and retaken as Grilse

But in reply, it was stated that Parr had also been marked and retaken as Bull Trout, *Salmo Eriox*, and Salmon Trout, *Salmo Trutta;* whence it was argued that the fish marked had been so marked carelessly and injudiciously, and were not Parr at all, but Smolts, or fry of some of the other *Salmonidæ*. Mr. Yarrel admits that he has seen these vertical marks in the young fry of the Salmon, Bull Trout, Parr, common Trout, and Welch Charr; but still maintains the existence of the Parr as distinct, principally on the ground that the Parrs are taken abundantly even in autumn, not exceeding five inches in length, long after the fry of the larger migratory species have gone down to the sea.

This is in the body of the work, written previous to the experiments made by Mr. Shaw; and this Mr. Yarrel there considers to be a sufficiently obvious proof that the Parr is not the young of the Salmon, or indeed of any other of the larger *Salmonidæ*.

The reason is of course annihilated by the proven fact, that the Pinks, which remain in fresh-water all the first year, are young Salmon, Parr-marked; whereas the young Salmon-fry, *Smolts*, formerly supposed to be the young fish of that year, all of which have gone down the river to the sea, are in truth the fish of the preceding year.

Similarly is the question settled with regard to the existence of Parrs in streams of the Western isles which are never visited by Salmon, these being, in all probability, the Brook Trout in the Parr stage of its existence.

And so again the fact that there are *lakes* in the same islands frequented by the Salmon and sea Trout, in which Parrs are never found —because the young fry, while in the Parr, or transversely banded, form, keep in the swift cold streams, and do not descend to the lakes.

It now appears to be certain, or as nearly certain as anything can be, which is not positively proved, that *every* species of the *Salmonidæ* is at one period a banded fish, or Parr.

This is known as an authenticated fact of the Salmon, Salmon Trout, Bull Trout, and common English Trout, as well as of the Welch Charr, as admitted by Yarrel.

Mr. Agassiz has figured the Hucho, *Salmo Hucho*, and the continental Charr, which he esteems identical with the northern Charr of England, *Salmo Umbla*, in the same stage—the other characteristics

of the different fish being unmistakable and evident—with the transverse bars. The same distinguished naturalist has taken the Great Lake Trout, or Mackinaw Salmon, *Salmo Amethystus*, and the Brook Trout, *Salmo Fontinalis*, which abounds in all small streams, wherein it is bred, in this same form.

There only remain to be accounted for some two or three species, the Great Gray Trout, of Britain, the Sea Trout, *Salmo Trutta*, and the Silver Trout, *Salmo Lacustris*, of Continental Europe, and on this continent, the Siskawitz, *Salmo Siskawitz*, and the Lake Trout, *Salmo Confinis*, of Dekay.

No especial search has been instituted for the fry of any of these fish last named; so that the non-discovery goes no way to prove their non-existence; on the contrary, all analogy goes to show that they will be discovered in time.

As it now stands, of fourteen, the most strongly-marked, *Salmonidæ*, nine have been clearly traced to this form; and the five missing species are either analogous, as the three European species, or closely congenerous, as the two American LakeTrout, to one species *Amethystus*, which is shown to be no exception to the rule.

Every migratory species of *Salmo* is found in this stage; and one of the five or six, non-migratory. All analogy, therefore, goes to show that these species will be found, on research, not to deviate from the rule of their order.

Mr. Shaw goes farther, and argues that no such perfect fish as the Parr exists; and that *all* the fish so named by different observers are in truth the young of different species of the Salmon family.

Against this fact, Mr. Yarrel reclaims; and justly remarks that "this is not conclusive evidence of the non-existence of a distinct small fish, to which the name of Parr ought to be exclusively applied; it rather shows the want of power among general observers to distinguish between the young of closely-allied species, three or four of which are indiscriminately called Parrs."

This is certainly true logic.

The fact that all the young of all the *Salmonidæ* are what have been called Parrs, is no proof that all Parrs are young and immature fish.

This matter, though, as it now stands, cleared of all the absurd

theories concerning cross-breeding between Salmon, Sea Trout, Grayling, and Common Trout, being set aside, is of easy proof.

It only rests to show the male and female Parrs full of ova, ready for spawning, and the question is settled.

In connection with this, it is fair to state, that Dr. Heysham, of Carlisle, in England, who is said to have devoted particular attention to this fish, which is there called Brandling or Samlet, observes that "The old Samlets begin to deposit their spawn in December, and continue spawning the whole of that month, and perhaps some part of January. As this season of the year is not favorable for angling, few or no observations are made during these months. As soon as they have spawned they retire, like the Salmon, to the sea, where they remain till the autumn, when they again return to the rivers."

After a number of farther observations concerning the young fry of the supposed Parr, their sizes, seasons, &c., he concludes by these words—"In short, we see Samlets of various sizes—we see them with milt and roe, in all the various stages, and we see them perfectly empty; all which circumstances clearly prove that they are a distinct species."

Clearly, indeed; if it appears that these circumstances can be authenticated; but this I, for the present, doubt—first, because if there had been visible facts, the theory never could have been started of their being unproductive mules. Second, because Sir William Jardine, after examination of the Parr of the Tweed, speaks of it as still uncertain whether it may not be the young of the common Trout, *Salmo Fario;* and for this reason, that though he has found males full of milt, he never has seen females with the roe in an advanced state; and, farthermore, distinctly avers, that "they have not been discovered spawning in any of the shallow streams or lesser rivulets, like the Trout."

Sir William, however, still leans to the opinion that there is a distinct species, in which the transverse markings are permanent, which reproduces its own kind, and never grows to a greater size than eight or nine inches; and this he would retain under the title given to it by Ray, of *Salmo Salmulus.*

Mr. Yarrel is of the same opinion; and has certainly shown decidedly that it is not a hybrid, or a species of which there are

no females, as had been surmised; since of three hundred and ninety-five Parrs, or Samlets, examined by Dr. Heysham, one hundred and ninety-nine were males, and one hundred and ninety-six females.

The great point, however, is this, which is now, I think, perfectly clear, and which at once dispels all the mystery of the question—namely—that the young of all the *Salmonidæ*—not *several* only, as Sir William Jardine and Mr. Yarrel state, but *all*—have, in their extreme youth, transverse bluish, or olive-colored markings; that they have all been confounded with one another, and—if there be such a fish—with the Parr proper; and that from this confusion, and the want of discrimination on the part of the observers, have arisen all the contradictory accounts of Salmon, Salmon Trout, Bull Trout, and Common Trout, raised from the veritable Parr.

Whether there do or do not exist a very small, distinct species of *Salmo*, in Great Britain, which retains these marks to maturity, is a matter of little comparative moment, though interesting to the naturalist. The first question was of the greatest importance, as involving the whole subject of reproduction of species; inasmuch as the facts, as asserted and formerly believed, were directly analogous to this, that from the eggs of a barn-door fowl, of one laying, were hatched bantams, quail, guinea-hens, pea-fowl, and any other gallinaceous fowl you please.

On this continent, assuredly, there is no distinct Parr, although undoubtedly it will appear hereafter, that like the young of every one of the family, like the true Salmon, the greater Lake Trout, and the Brook Trout, the other species without exception, have the Parr markings.

On this topic I have dwelt somewhat at length, yet I trust not so long as to weary my readers, the great interest of the point at issue, and the almost interminable discussion which has been maintained on the subject, rendering me peculiarly anxious to adduce something new and to the point; which, thanks to the kind assistance of my friend, Mr. Agassiz, I trust I have succeeded in doing.

I may here venture to add that the distinguished gentleman I have just named, is inclined to incredulity as regards the existence of a distinct species of Parr.

I shall now recur to the experiments on the ova of Salmon; first,

for the purpose of showing how they may be brought into direct practical utility, and rendered subservient to the pleasure of the angler, as a method of stocking inland waters; and, secondly, of pointing out how easily experiments might be made in this mode, as to the hybridization of fishes, and the rearing new species of mules, or ascertaining that they cannot be reared, by the commixture of the milt and roe of various distinct species of the same family in small tanks, fed by running brooklets.

It has been shown above, that the impregnated spawn of any two live breeding fishes of the same family, may be artificially hatched and preserved in waters other than those in which the parent species are wont to live; as even the Salmon in fresh-water.

I shall now proceed to show that the same result may be obtained by the commixture of the melt and roe in aërated water, of dead fishes recently taken.

It is absolutely necessary that the water should be aërated, or highly supplied with oxygen. For it is for the purpose of finding water in this condition, that the Salmon, the Shad, the Bass, the Smelt, and all those fish which resort to fresh-waters, for the purpose of spawning, run to the shallow, pure, and swiftly-flowing brooks, to which their rapidity and frequent falls impart purity and vitality, by mingling them with the atmosphere. In the same manner, the fish of the sea resort for the deposition of their ova to the weedy shoals, where the vegetables, in process of their growth, under the influence of the sun, distribute air through the waters around them.

"The science required for this object"—that is to say, the raising foreign fishes for the stocking of home waters—thus speaks Sir Humphrey Davy, in his delightful work, "Salmonia"—"is easily attained, and the difficulties are quite imaginary. The impregnation of the ova of fishes is performed out of the body, and it is only necessary to pour the seminal fluid from the melt upon the ova in water. Mr. Jacobi, a German gentleman, who made, many years ago, experiments on the increase of Trout and Salmon, informs us, that the ova and melt of mature fish, *recently dead*, will produce living offspring. His plan of raising Trout from the egg was a very simple one. He had a box made with a small wire grating at one end in the cover, for admitting water from a fresh source or stream, and at the other end

of the side of the box, there were a number of holes, to allow the exit of the water; the bottom of the box was filled with pebbles and gravel of different sizes, which were kept covered with water that was always in motion. In November, or the beginning of December, when the Trout were in full maturity for spawning, and collected in the rivers for this purpose, upon the beds of gravel, he caught the males and females in a net, and by the pressure of his hands received the ova in a basin of water, and suffered the melt, or seminal fluid, to pass into the basin; and after they had remained a few minutes together, he introduced them upon the gravel in the box, which was placed under a source of fresh, cool, and pure water. In a few weeks the eggs burst, and the box was filled with an immense number of young Trout, which had a small bag attached to the lower part of their body, containing a part of the yolk of the egg, which was still their nourishment. In this state they were easily carried from place to place, in confined portions of fresh-water, for some days, requiring apparently no food; but after about a week, the nourishment in their bag being exhausted, they began to seek their food in the water, and rapidly increased in size. As I have said before, Mr. Jacobi assures us that the experiment succeeded as well with mature fish, that had been killed for the purpose of procuring the roe and the melt, these having been mixed together in cold water immediately after they were taken out of the body. *I have had this experiment tried twice*," continues Sir Humphrey, speaking in his own person, "*and with perfect success;* and it offers a very good mode of increasing to any extent the quantity of Trout in rivers or lakes; for the young ones are preserved from the attacks of fishes, and other voracious animals or insects, at the time when they are most easily destroyed, and perfectly helpless. The same plan, I have no doubt, would answer equally well with Grayling, and other varieties of the *Salmo* genus. But in all experiments of this kind, the great principle is to have a constant current of fresh and aërated water running over the eggs."

Now it is manifest from this, that any person resident in the near vicinity of any lake or river, abounding in any species of this family, the Common Trout, the True Salmon, the Lake Trout, and probably the Otsego Bass, *Coregonus Otsego*, which is one of the same family, likewise, having also the command of the smallest possible source of

fresh running water, can raise, in the space of a few weeks or months, an indefinite number of young fish, of any of these varieties, which, during the first week or ten days, can be removed to any distance that can be reached in that time—and, in these days of steam velocity, what distance cannot be reached?—in any cask, jar, or other vessel, capable of containing a few gallons of water.

There would not, in this manner be the smallest difficulty, and very small trouble or expense, in translating the Mackinaw Salmon and the Siskawitz Trout from Lake Huron and Superior, to the inland waters of New York, New Jersey, and Pennsylvania—not the smallest difficulty in introducing the true Salmon from the Penobscot or the St. John, to any lake, river, or stream, in the Middle States; and, it having been proved by the experiments of Mr. Upton, in Lilymere, as recorded above, that the Salmon will live and preserve its excellence in fresh-water, entirely debarred from egress to the sea, would it not be a highly interesting, and, if successful, valuable, experiment, to attempt its introduction into the hundreds of limpid lakelets which gem the inlands and uplands of our Northern States?

Again, as it is well known that all the migratory fish, like the birds of passage, return, whenever it is possible, to the streams wherein they were themselves bred, to breed, it seems to me that it would be well worth the trying whether these streams of ours here, to the southward of Maine, which, within a century or two, teemed with Salmon, but in which one is now never seen, might not be colonized and restocked with the delicious fish.

There is no plausible reason why the pinks which should be transported to the upper Hudson, and should there remain till they become smolts, should not return as grilse to the scenes of their childhood.

Nor do I see any good reason why they should not continue to breed, and to frequent any river into which they should be so introduced.

The cause of their desertion of these rivers is inexplicable. It has been attributed to steamboats, but that is ideal; for the Tay, the Tweed, and the Clyde, and half-a-dozen other English and Scottish rivers, which still abound in Salmon, are harassed by more steamboats, hourly, than are the Kennebeck and Penobscot now, or than were the Hudson and Connecticut at the time when the Salmon forsook them, daily.

I think it, myself, far more probable that they were poisoned, and driven from the head-waters and tributaries, in which they were wont to spawn, by the sawdust, especially of the hemlock; and that the stock which were used to run up these estuaries having become extinct, the traditional instinct is lost, and there are no fish left which know the way to our waters.

If this be a true reason—and, the known instinct of the animal considered, it is as plausible a conjecture as any other—it is certain that many rivers, whose waters a few years ago ran turbid with sawdust, and whose every tributary resounded to the clack of the saw-mill, now again run as limpid as ever, and are guiltless of saws, as well as of the timber to supply them.

I contend, therefore, that there is no analogy against, but much in favor of the possibility of restocking the Southern rivers of the Middle States with Salmon, which should return, and breed in them, year after year.

Nor, looking to the vast profit directly arising from such fisheries, can I doubt, particularly when regarding the action of the New York Legislature in regard to a fish so comparatively worthless as the Carp, that, could such a thing be effected as the recolonization of our rivers with Salmon fry, some action of the legislatures would ensue for their protection, until such time as they could be fairly naturalized.

Whether *this* be feasible or not, it is *certain*, that to every inland spring-lake, from the western line of Pennsylvania to their easternmost and northernmost limits, every variety of Brook Trout and Lake Trout can be introduced with ease, and at a trivial expense; nor these only, but the true Salmon likewise. And I strongly believe that, when the extreme simplicity of the method, and facility of the means, become generally known, the true Salmon will be introduced, at least, into the lakes of Hamilton County, as well as into many other inland waters. In fact, running as he does now into Ontario, there is no reason why he should not be safely lodged, beyond the power of returning, above Niagara, and compelled to fill Erie, Michigan, Huron, and Superior with his noble race.

A few years since, he found his way into Seneca and Cayuga Lakes, and if modern improvements—heavens! how I loathe that word!—have not excluded him, he finds his way there yet, and thence might

be propagated, *ad infinitum*, through the whole region of the lesser lakes.

The next point of great value to be attained by the use of experiments of this nature, is the ascertaining how far fish are capable of hybridization; and possibly the creation of new and interesting varieties, besides the elucidation of sundry, now mooted, questions concerning the manner in which various species, now distinct, have arisen, and whether in truth they are distinct or no.

Now, it is of course just as easy to commingle, in the manner heretofore described, the melt and roe of two distinct varieties, as of the same species; and the consequences of such an admixture would excite the attention of the whole scientific world.

Anywhere in the northern and north-eastern part of the State of New York, anywhere in the northern parts of New Hampshire, Vermont, or Maine, it would be the easiest thing in the world to procure the common Lake Trout, *Salmo Confinis*, if not alive, at least within a few hours after his capture, and the common Brook Trout, dead or alive, in any desirable quantities.

There is little if any difference in the spawning period of these two *Salmonidæ*, so that it would require very little pains or attention to procure the males and females under the circumstances proper for the making of such an experiment, which might be performed precisely as I have described it above; trying, in different instances, the males and females of the two species alternately.

There are thousands and tens of thousands of little tumbling transparent rills, throughout that country—scarcely a farm without a dozen such—which have numerous natural basins in their courses, each of which, with the aid of a few hours' work employed in raising a timber dam, and applying a grate at the entrance and egress of the stream, would constitute as perfect a store-pond for the making of such experiments as could be erected by the wealth of Crœsus; with the advantage, too, of having the fish requisite for the tests existing, in a state of nature, within a few miles, perhaps within a few hundred yards, of the scene of action.

One place already made to hand, requiring no improvement or alteration, strikes me on the instant; and one familiar, I doubt not, to very many of my readers. I mean Barhydt's Trout-ponds, near

Saratoga Springs, where the Brook Trout abound, in what perfection all epicures well know; and where the Lake Trout could be obtained, with small trouble, alive, from the waters of Lake George, and recently dead, without any trouble at all. Whether the latter fish is found in Saratoga Lake or not, I cannot say; but I should rather suppose it is; if so, the matter would be yet further simplified.

The apparatus described above, which could be made at the cost of a few shillings, might be placed in the runway, between the upper and lower ponds, so as to allow that beautifully clear and sparkling source to bathe the ova constantly, until hatched; after which the fry should be kept in confined vessels until the yolks of the egg were absorbed, when they should be transferred to one or other of the tanks fed by the streamlet.

In the same manner, in many places, especially in Maine, near the west branch of the Penobscot, where it flows within a few miles of Moosehead Lake, the former a favorite spawning station of the true Salmon, the latter abounding in the large Lake Trout weighing sometimes up to thirty or forty pounds, it might easily be ascertained whether a hybrid could be obtained between these two fishes; and so, perhaps, in a greater degree upon the shores of the great lakes, where both these species are taken, eastward at least of Niagara.

A similar trial might be made with the ova of the Salmon, and of the common Trout; which could be done with greater facility than the other, from the fact that the two species are constantly found naturally coëxistent in the same waters.

Should any of these experiments result in the production of hybrids, another interesting question would arise, as to whether the males thus produced should be again capable of reproducing their own species. Should this be the case, it would go very far toward the breaking up the whole theory of distinct species of this family, and proving them to be merely accidental varieties, casually produced at first, and having become, in process of generations, capable of transmitting their own peculiar type to their progeny—as is the case clearly with the various breeds of dogs, horses, cattle and other domestic animals, which, so long as they are preserved unmixed, will produce their like; but which, if inter-bred with other closely-kindred races, will produce a mongrel, but not a hybrid—one, I mean, which is capable of reproduction.

Thus Shetland ponies breeding together will produce Shetland ponies; and blood-horses of the Arab stock, blood-horses.

Intermix these, and you shall have a cross-bred offspring; which is not, however, a hybrid, like the produce of a horse and an ass; for it is capable of breeding again, with its own type, or with either of the parent races, or with any other pure horse.

And so of hounds, setters, greyhounds, and all the varieties of domestic dogs, so long as they are interbred among themselves; but the moment they are associated with the wolf, fox, jackal, dingo, or any of the congenerous though *distinct* races, they will breed with them, it is true, but the progeny will be truly hybrid and barren.

If, therefore, it should be proved on experiment, that the various distinct species of the *Salmonidæ*, as they are now held to be, will, when interbred, produce young capable of reproduction, it would go very far to establish the fact that the distinctions are not distinctions, but merely varieties.

I must not, however, be understood as saying that the success of experiments, and the establishment of such a result as I have supposed, would go at all to prove that such intermixture of varieties occurred, or such cross-breeds were produced, in a state of nature; far from it.

We know, that in vegetables, hybrids can be, and are, readily produced by artificial means, which will not occur once in a century, perhaps never would occur at all, were the plants left to the operation of nature.

Nature abhors monstrosities; and the proverb that the "cat will follow kind" is of older wisdom than Will Shakspeare's. Man's freaks have raised mongrels between the lion and the tigress; nature's, so far as we know, or can conjecture, never. And always in a wild state a hundred circumstances, such as different size, different habits, haunts, associations, and last, not least, fear—one species of the same family being habitually the devourer of his relatives—will prevent the occurrence of such admixtures between animals.

It would require many and strong evidences to make me believe that the Brook Trout of ordinary dimensions would trust itself willingly within such distance of the Salmon, or Lake Trout, as would permit their ova to commingle in a single furrow.

Nor, indeed, do I believe, myself, that the result of such experi-

ments as these last-named would be *success;* although I gather from a note of Dr. Bethune's, to his beautiful edition of Walton, that he rather leans to the opinion that the various species of this family were more capable of intermixture, and more accustomed to interbreed, than I am disposed to credit.

At all events, there would be great interest and entertainment in the instituting such a series of experiments; and the result, whatever it should be, could not fail of importance.

That those which I first mentioned are eminently practicable, is not to be doubted; and there is strong reason for believing that this science was fully understood, and constantly practiced, like many other good things now forgotten, or, as we flatter ourselves, recently discovered, by the monks of old.

That Carp were introduced from the continent to England, by the monks, is nearly certain; this, however, could be accomplished without recourse to any artificial modes of producing or raising the young fry. There are, however, many and powerful reasons for believing that the Grayling *Thymallus Vexillifer*, the Charr, *Salmo Umbla*, the Gwyniad, *Coregonus Fera*, and perhaps, also, the Vendace, *Coregonus Willughbii*, the Pollan, *Coregonus Pollan*, and the Powan, *Coregonus Lacepedei*, were also introduced by the same agency from foreign countries. This belief is supported by the fact, that these fish exist only in isolated, and often distant waters; sometimes in only one of two neighboring rivers, whereof that which contains them is apparently the least adapted to their habits; but always in such waters as had many or distinguished monastic institutions on their banks. While England was Catholic, great attention was paid to the raising and fattening the choicest varieties of fresh-water fish; an art which has sunk into neglect, partly owing, doubtless, to the abolition of fast-days, and partly to the great facility with which the finest sea-fish are transported throughout the country.

If the fish I have last mentioned were so introduced, it must have been by some such process as that which I have here described; for they are all of so sensitive and delicate a nature, that it is with the greatest difficulty they can be kept alive for an hour or two after being captured, and that only by a constant change of fresh spring water; circumstances which would have made it utterly impossible

that they should have been transported from the continent, after they had arrived at maturity.

Even to this day, in Austria, Illyria, and parts of the Tyrol, the greatest attention is paid to the nurture of the most delicate fresh-water fishes in confined situations; and Sir Humphrey Davy states in his "Salmonia," that, "at Admondt, in Styria, attached to the magnificent monastery of that name, are abundant ponds and reservoirs for every species of fresh-water fish; and the Charr, Grayling, and Trout are preserved in different waters—covered, enclosed, and under lock and key."

And now having at length come to the end of this sort of dissertation on the breeding, growth, and specific generation of the Salmon, I shall briefly consider his characteristics, distinguishing marks and habits, before passing to his nearest relation, in this country at least, the Brook Trout.

The Salmon, *Salmo Salar*, of Linnæus and all authors, is, I have observed before, a soft-finned fish of the abdominal division, his ventral fins being attached to the parietes of the belly. His head is smooth, his body scaly. His dorsal fins are two in number, the first supported by soft rays, the second adipose or fatty, without rays; he has teeth on the vomer, both palatine bones, and all the maxillary bones. His branchiostegous rays vary in number, generally, from ten to twelve, but are irregular, and do not always coincide on the two sides of the head. The teeth on the vomer rarely exceed two in number, and there is frequently but one; a sign which is thought to distinguish him from the Salmon Trout, and other connected species.

The length of his head, to the whole length of his body, is as one to five; the eye small and nearer to the point of the nose than to the posterior edge of the gill-cover. The pectoral fin is two-thirds the length of the head, and has twelve fin-rays. The ventral fin lies in a vertical line under the middle of the dorsal fin, and has nine rays; the anal fin commences about half-way between the origin of the ventral and caudal fins, and has nine rays; the caudal fin, or tail, has nineteen rays; when the fish is very young, it is much forked, but as it advances in years, the central caudal rays grow up; and it becomes nearly square by the end of the fourth year. The first dorsal fin has thirteen rays, all of which, with the exception of the two first, are branched.

The body is long, and about equally convex above and below; the lateral line dividing the body nearly equally, and, to a certain degree, parting the dark hue of the back, and silvery whiteness of the belly.

The form of the gill-covers, shapes of the fins, and relative proportions of the whole fish, will be readily understood by reference to the plate facing page 54, at the head of this article, which will give a more correct idea than any written description.

The Salmon is, to all intents, a fish of prey; and to this end every part of his frame is adapted, in the most perfect manner, by the master-hand of nature. The elongated form of his body tapering forward and aft with the most gradually curvated lines, like the entrance and the run of some swift-sailing barque, enables him to glide through the swift water in which he loves to dwell, displacing its particles with the least resistance; the powerful muscles and strong branched rays of his broad and vigorous caudal fin serve as a propeller, by which he can command an immense degree of momentum and velocity, and ascend the sharpest rapids.

No one who has once felt the arrowy rush of a fifteen-pound Salmon, when struck with the barbed steel, will be inclined to undervalue his strength, his speed, or his agility; and the numerous and astonishing leaps which he is capable of making, to the height of many feet above the surface, either in attempting to rid himself of the hook, or in surmounting obstacles to his upward passage, in the shape of dams, floodgates or cataracts, prove the exceeding elasticity, vigor and strength of his muscular system.

The prodigious power of sinew exhibited in the lythe and springy limbs of the quadrupeds of prey of the feline order, is not superior in its degree to that possessed by this, the veritable monarch of fresh-water fishes; nor are the curved fangs and retractile talons more efficacious instruments to the lion and the tiger for the seizure of their victims, than are the five rows of sharp hooked teeth, with which the whole mouth of the Salmon is bristled, for the prehension and detention of his slippery and active prey.

Nor is he less bold, fierce, and persevering, than he is well provided with the means of pursuit and the instruments of destruction.

As a proof of the strength and courage of this family, it is recorded by Mr. Yarrel, that a Pike and a Trout, put together in a confined

place, had several battles for a particular spot, but the Trout was eventually the master. The comparative size of these fish is not mentioned, but of course there was something approaching to an equality, as the Pike constantly preys on small Trout.

It is very certain that, although great havoc is made among Salmon by the Seal and the Otter, there is no fresh-water fish which would venture on attacking them, not even the Pike, at his largest size.

The Salmon grows to a very large bulk, though the average run is probably from eight to sixteen pounds; and as is the case with many kinds of fish, the middle-sized, of twelve or fourteen pounds, are generally considered the best in an epicurean point of view, and afford, commonly speaking, nearly as much sport when hooked, as the monsters of the species.

"The present London season, 1835," says Mr. Yarrel, speaking on this point, "has been more than usually remarkable for large Salmon. I have seen ten different fish, varying from thirty-eight to forty pounds each. A notice appeared in the public papers of one that weighed fifty-five pounds. Salmon, however, of much larger size have been occasionally taken. Mr. Mudie has recorded one of sixty pounds. In a note to the history of the Salmon, in several editions of Walton, mention is made of one that weighed seventy pounds; Pennant has noticed one of seventy-four pounds; the largest known, as far as I am aware, came into the possession of Mr. Groves, the fishmonger in Bond-street, about the season of 1821. This Salmon, a female, weighed eighty-three pounds; was a short fish for the weight, but of very unusual thickness and breadth. When cut up, the flesh was fine in color, and proved of excellent quality.

"The Salmon of the largest size killed by angling, of which I have been able to collect particulars, are as follows: In the Thames, October 3, 1812, at Shepperton Deeps, Mr. G. Marshall, of Brewer-street, London, caught and killed a Salmon that weighed twenty-one pounds four ounces, with a single gut, without a landing-net."

Sir Humphrey Davy is recorded as having caught an immense fish, weighing about forty-two pounds, immediately above Yair-bridge, and captured him after a severe struggle.

Mr. Lascelles, in his letters on sporting, says:—"The largest

Salmon I ever knew taken with a fly, was in Scotland; it weighed fifty-four pounds and a half."

In this country, except in Canada, where there are many excellent and enthusiastic Salmon-fishers, this noble sport is but little followed, and there are few records extant of the number or size of fish taken.

It will be sufficient to observe, however, that in the St. Lawrence and its tributaries, especially those great streams coming in from the Northward, the Saguenaw particularly, the number and size of the Salmon are at least equal to those in the finest English or Scottish rivers; an intimate friend of my own having killed within a few years, on the St. Lawrence, near the mouth of the river named above, twenty fish in a single day's fishing, one of which weighed above forty pounds, while the smallest, if I am not greatly mistaken, exceeded sixteen. This was all done with the fly.

"It may be stated generally," says Yarrel, "that Salmon pass the summer in the sea, or near the mouth of the estuary; in autumn they push up the rivers, diverging to their tributary streams; in winter they inhabit the pure fresh water, and in spring again descend to the sea."

These habits of the fish are unquestionably more or less modified by climate and other influences, and it is certain that in America the Salmon enter the rivers, and begin to run up them in June; by September they have arrived at the shallow and gravelly head waters of the streams, and are preparing to spawn; and I presume that as soon as that operation is finished they return to the salt-water to recruit, and consequently that here they do not pass the winter in fresh-water.

It has been supposed by many observers, that the Salmon do not go very far out to sea, but remain constantly within soundings, and not very far distant from their native streams, to which, whenever it is practicable, they return; this is, however, very questionable.

Many are taken on the British coasts, while running along the shore in the summer months, and searching for the mouths of the rivers which they desire to ascend; but very few are taken here until they have made their way up the estuaries, when they are captured in great numbers by means of stake-nets.

They do not, it is true, invariably return to the streams in which they were bred, although they do so, beyond doubt, in a very great

majority of instances; but it would appear from the observations of Dr. Heysham and Sir William Jardine, that if they have roved to a very great distance from the estuary of their own stream, they betake themselves to the mouth of the first river they reach, if its temperature and the condition of its waters suits them.

Many Tweed Salmon are occasionally taken in the frith of Forth, and it is even said that in seasons when the Forth fisheries are unusually successful, those of the Tweed are as much the reverse. Sir Humphrey Davy is of opinion that the taste of the waters of different rivers, according as they are impregnated with different substances, and the effect produced by them on the bronchiæ of the fish in the act of breathing, are the guides by which Salmon are led back to the streams to which they have been accustomed; and he accounts for their being occasionally mistaken, by the fact that such mistakes frequently occur during great floods, connected with storms, or violent motion in the waters near the shore; by which the components of the waters are disturbed, and their flavor consequently altered. In confirmation of this view, he relates that he "remembers in this way, owing to a tremendous flood, catching with the fly a large Salmon which had mistaken his stream, having come into the Bush, near the Giant's Causeway, instead of the Bann. No fish can be more distinct," he proceeds, "in the same species, than the fish of these two rivers, their length to their girth being in a ratio of 20 : 9 and 20 : 13."

I am not, however, inclined to adopt this explanation. For it seems to me that in migratory animals of all kinds, and indeed, in some instances, in domestic animals likewise, that there is some sort of sixth sense, or at least some entirely distinct power, not acquired by means of any of the senses of which we are cognizant, nor acting like reason, by means of deduction, which enables them to steer their course through countless leagues of air or water, or over miles of uncultivated land, to the places where they were bred, or to which their instincts compel them to resort for the purpose of wintering, obtaining food, or the like.

And I no more believe that Salmon are guided back to their native rivers by the flavor of the waters, than I do that the swallow, finds his way from Africa to Europe, or from Southern to Northern America, by the scent of the tainted atmosphere.

I am disposed, therefore, to believe with Yarrel, that this occasional variation from their ordinary custom, is caused by their having strayed to such a distance from their native estuaries, that when the time comes for returning, they prefer taking the first suitable river, to making longer delay.

The female fish, it is observed, are the first to enter the rivers, and the grilse, or young fish, which have not yet spawned, come in earlier than the full-grown Salmon. They swim with great rapidity, shoot up the most oblique and glancing rapids, with the velocity of an arrow, and frequently leap falls of ten or twelve feet in perpendicular height.

It was formerly believed that, in making their prodigious springs, the fish takes its tail in its mouth, and shoots itself like a pliant stick, the ends of which are forcibly brought together and then allowed to spring. This, however, is a fable; although, in making these leaps, the muscular efforts of the animal do really impart to it a curvilinear form.

It is believed that the utmost limit of perpendicular height which they can attain is fourteen feet; but their perseverance is as remarkable as their strength, and though they fail time after time, and fall back into the stream below, they remain but a few moments quiescent, to recruit their strength, before they renew their efforts; and they generally succeed in the end, although they are said sometimes to kill themselves by the violence of their own efforts to ascend, and are frequently captured in consequence of falling on the rocks.

I once watched a Salmon for above an hour endeavoring to pass a mill-dam on the river Wharfe, a Salmon river in the West Riding of Yorkshire. The dam was of great height, thirteen or fourteen feet at least, and was formed with a sort of step midway, on which the water fell, making a double cascade. While I was watching him, this fish, which was, I suppose, of some seven or eight pounds, made above twenty leaps, constantly alighting from his spring about midway the upper shoot of the water, and being constantly swept back into the eddy at its foot. After a pause of about a couple of minutes, he would try it again; and such was his vigor and endurance, that he at last succeeded in surmounting the formidable obstacle; and to my

great pleasure—for I had become really interested in his success—went on his way rejoicing.

The voracity of the Salmon is excessive; and yet from the singular fact, that their stomachs are invariably, or almost invariably, found entirely empty, none of the numerous examiners have been able to satisfy themselves what constitutes its principal support. The stomach of the Salmon is, comparatively speaking, small; and Sir Humphrey Davy asserts that, out of many which he had opened, he never found anything in their stomachs, but the tape-worms bred there, and some yellow fluid. This peculiarity must, I think, be in a great measure attributed to their rapid digestion. In this they differ greatly from the Salmon Trout, which is constantly found stuffed with food of all sorts, the remains of small fish, beetles, insects, and the sand-hopper, *Talitris locusta*, which would seem to be their favorite food.

Dr. Knox states, that the food of the Salmon, and that on which all its estimable qualities, and in his opinion, its very existence depends, and which the fish can only obtain in the ocean, he has found to be the ova, or eggs of various kinds of echinodermata, and some of the crustacea. From the richness of the food on which the true Salmon solely subsists, arises, at least to a certain extent, the excellent quality of the fish as an article of food. Something, however, must be ascribed to a specific distinction of the fish itself; for though he has ascertained that the Salmon Trout lives in some localities on very much the same kind of food as the true Salmon, yet, under no circumstances does this fish ever attain the same exquisite flavor as the true Salmon."

Dr. Fleming states that their favorite food is the sand-eel; "I have myself," says Mr Yarrel, "taken the remains of the sand-launce from their stomach." It is known, moreover, that they are taken in Scotland by lines baited with this brilliant and glittering little fish; as are the clean-run fish, fresh from the sea, with the common earth-worm. Mr. Yarrel mentions an instance of one being taken in the Wye with a minnow, and Sir Humphrey Davy states, he has fished for them in the Tay with great success, with the Parr, probably their own young fry, on spinning tackle.

For what they mistake the large artificial fly, by which they are so

marvellously allured, taking it greedily, at a very short distance from the sea, we cannot determine. It is like nothing that has any existence in nature; and some persons have imagined that the Salmon is deceived by the gay colors and the ripple of the water, and so takes them for small fish. This is not credible, however; and the most plausible suggestion is that of Sir Humphrey Davy, that the fish, on their return from salt water, where, of course, they find nothing analogous to the natural or artificial fly, are actuated "by a sort of imperfect recollection of their early food and habits; for flies form a great part of the food of the Salmon fry, which for a month or two after they are hatched, feed like young Trouts—and in March and April, the spring flies are their principal nourishment. In going back to fresh water, they may perhaps have their habits of feeding recalled to them, and naturally search for their food at the surface."

While I am on this topic, it may not be uninteresting to quote the relation of an experiment tried with regard to the effect of various kinds of food on the Trout, as it is probable that, in fish so closely allied, the facts would not vary much in relation to the Salmon.

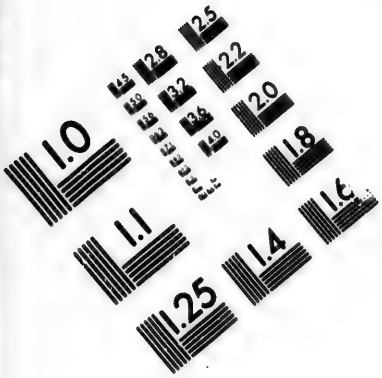
Mr. Stoddart relates this, in his "Art of Angling as practised in Scotland;" but the experiment was made in the South of England. "Fish were placed in three separate tanks; one which was supplied daily with worms, another with live minnows, and the third with those small dark-colored water flies, which are to be found moving about on the surface, under banks and sheltered places. The Trout fed with worms grew slowly, and had a lean appearance. Those nourished on minnows, which, it was observed, they darted at with great voracity, became much larger; while such as were fattened upon flies only, attained in a small time, prodigious dimensions, weighing twice as much as both the others together; although the quantity of food swallowed by them was in no wise so great."

I may here observe that, from the fact of the Salmon roe, when preserved *secundum artem*, proving a most deadly and infallible bait for Salmon—so much so indeed, that the use of it in England is regarded as unsportsmanlike, and as an act of poaching—there can be little doubt that the ova of fishes of all kinds contribute to their food, and add probably to the richness of their flesh.

I have now gone through, I believe, all that is most remarkable and

most interesting in relation to the natural history, the form, habits, food and seasons of this noble fish; but those who wish to study him for themselves, and read concerning him more at large than the space, which can be allotted to a single specimen in this volume, will admit, I refer to Yarrel's fine work on British Fishes; to that delightful work "Salmonia," by Sir Humphrey Davy; and to Scrope's superb work, entitled, "Days and Nights of Salmon Fishing," which, though I have not enjoyed an opportunity of examining it, I understand to be both the finest and the most complete treatise on this topic.

In a future portion of the work, I shall enter at large upon all the minutiæ of rods, tackle, bait, &c., necessary for the capture of the king of the fresh-waters; as well as upon the science of taking him with the artificial fly, and all the appliances to that end. Until then, adieu to Salmo Salar.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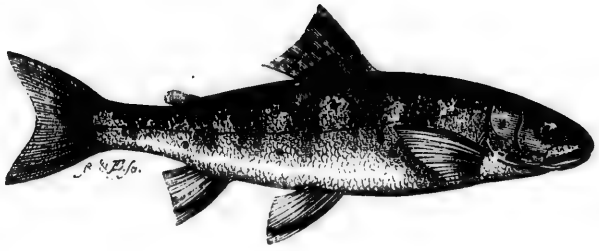


Brook Trout, very Young Fry.

THE BROOK TROUT.

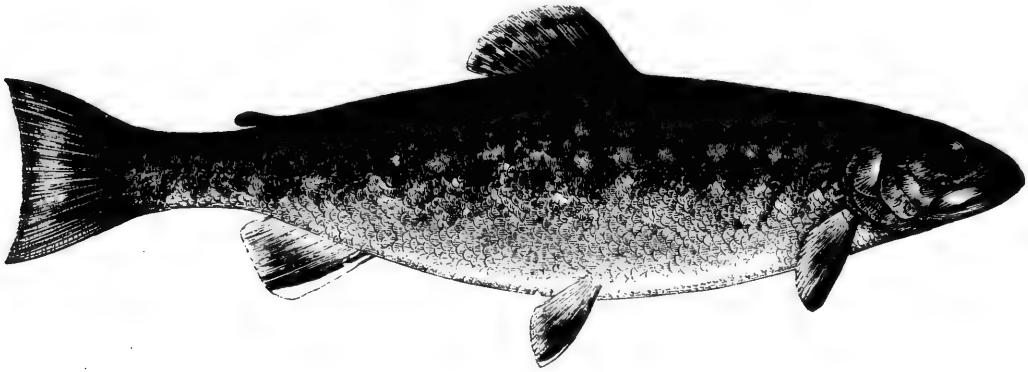
THE COMMON TROUT—THE TROUTLET.*

The New York Chasr; Richardson.—*Salmo Fontinalis;* DeKay.

Like the wild animals of this continent, almost without exception, the Trout of America is a distinct species from the fish of Europe; although, as in many other instances, the general resemblance is so strong, and the characteristic differences so narrow, that in the eyes of a common observer, judging from memory only, they appear to be identical.

Many sportsmen, who have been in the habit of killing this beautiful fish, both in this country and in Europe, are under the impression that there is no material difference; but such is not, in truth, the case; for as with the snipe, the teal, the widgeon, and many others of the birds of America, the characteristic marks of distinction, though easily overlooked at first, by a person unacquainted

* This name is applied to the fish while in the state represented in the cut above, by Dr. DeKay.



BROOK TROUT, NORTH AMERICA.

SALMO FONTINALIS. MITCHIL.

ON WOOD, from an Original Drawing, H.W. HERBERT.

with them, when once pointed out, cannot be readily mistaken, and, being both permanent and invariable, are quite sufficient to establish diversity of species.

It is not in formation, moreover, or appearance only, but in very many of its habits, that the Brook Trout, *Salmo Fontinalis*, of America, differs from his congener, the common Trout, *Salmo Fario*, of Europe.

Still, in general, his manners, his haunts, his prey, and his mode of taking it, so closely resemble those of the European Trout, that as a general rule, the instructions given for the taking the one will be found successful as regards the other; and the flies, baits, and general style of tackle, as well as the science of capturing, with some few exceptions, which will be noticed hereafter, are nearly identical, on the two sides of the Atlantic. As in Europe, so in America, although there are countless varieties of this most beautiful of fishes, almost indeed a variety for every stream, still, according to the opinions of what I deem the best authorities, there is but one distinct species.

Endless attempts have been made in England to distinguish and define fresh species; but these have, in my judgment, all failed. According to Mr. Agassiz, whose opinion on this subject I consider paramount to all others, the Gillaroo, or Gizzard-trout, as it is sometimes erroneously called by the Irish, and some of the Scottish writers, is merely a casual variety of the *Salmo Fario*. The distinction, which consists principally in the thickness and induration of the stomach, having arisen from feeding on shell-fish, in the first instance, in individuals, has been gradually ingrafted on generations, until, in process of time, it has become a permanent type.

Although this variety is not known to exist on this continent, I have a very strong suspicion, from many circumstances which I have heard, on good authority, concerning the Trout of the Marshpee river, in Massachusets, that on examination, it will be found to possess some of the leading peculiarities of this fish, particularly the indurated stomach. I have never had an opportunity of seeing the Trout of this river; but I know that it has many peculiarities of habit resembling those of the Gillaroo, especially that of feeding on shell-fish, a friend of mine having actually succeeded in taking them with small white crabs, at a time when they would look at no other bait.

I mention this, merely by way of suggestion, as offering an interesting subject of investigation for naturalists.

Sir Humphrey Davy, in his Salmonia, rather leans to the idea that the Gillaroo is a distinct species, though he leaves it uncertain whether it may not be a permanent variety; his principal argument being this, that he has caught small fish, not longer than the finger, with a fly, "which had as perfect a hard stomach as the larger ones, with the coats as thick in proportion, and the same shells within."

In external appearance, the Gillaroo is said to differ from the common Trout "very little, except that they have more red spots, and a yellow or golden-colored belly and fins, and are generally a broader and thicker fish." Again, Sir Humphrey admits that "in a clear and cool river, fish that feed much on larvæ, and swallow the hard cases, become yellower, and the red spots increase so as to outnumber the black ones; and these qualities become fixed in the young fishes, and establish a particular variety."

This would seem, in plain English, to describe the existence of a fish in the direct process of change, from the ordinary form of the Trout to the Gillaroo, the feeding on the larvæ of winged insects, in their hard stony cases, being, as it were, a first step toward becoming shell-fish eaters, and the effect being indicated in the gradual change of color, though the causes have not been as yet sufficiently powerful to produce the induration of the stomach.

In America, likewise, it has been attempted to draw a distinction; and Dr. DeKay, a very accomplished and able ichthyologist, although perhaps—with all deference be it spoken—rather too much of an indoor naturalist, and too much inclined to admit hearsay evidence, has designated a species as *Salmo Erythrogaster*, the Red-bellied Trout; which I confess I do not believe to be even a permanent variety, but merely a brilliant specimen of the common Brook Trout, in its highest season, taken, probably, from some very bright and sunny water. In this view I am fully sustained by Professor Agassiz, who has made some very curious experiments with regard to the colors of fishes, of the *Salmonidæ* especially; and who has ascertained, beyond a doubt, not only that the Trout of different neighboring waters are affected by the color and quality of the water, but that the Trout of *the same river* vary in color accordingly as they haunt the shady or the sunny side of

the stream. For it is a well-known fact, that the *Salmonidæ*, although many of them are migratory at certain seasons, have their own haunts and hunting grounds to which they steadily adhere, moving but a short distance from one spot, in pursuit of their prey, and returning to it when satisfied.

Thus, in a mountain-brook, you shall find, perhaps, that the pool between an upper and lower fall or rapid is occupied by two fish; one of these will lie at the head, the other at the tail, of the pool, the more powerful fish selecting the spot which he chooses, and neither exchanging places, nor hunting far from his habitual haunts.

In still waters, in like manner, you will find that, day after day, the same large Trout will be seen under this bank, by that large stone, or in the cavity formed by the roots of yon ash or alder; and that he will not stray to any distance from it, but will seek his prey nearly in the same waters, and on the same side of the river, the opposite bank being probably held by a rival fish.

That this will at first be deemed far-fetched and improbable, I think likely enough; but the more we consider it, the more reasonable shall it appear; for when we weigh the great influence of light in the production of colors, and then think how much the transmission of light through different media, as, for instance, waters of different degrees of density, purity, and color, affects the light itself, we shall find the theory far less extravagant than it strikes us at a first glance.

And here, I shall quote an anecdote, related in Salmonia, for the purpose of elucidating an entirely different point, which yet is so much to the purpose, in the present instance, that it is even more valuable in illustration of this, than of that for which it is quoted.

"A manufacturer of carmine," thus runs the story, "who was aware of the superiority of the French color, went to Lyons for the purpose of improving his process, and bargained with the most celebrated manufacturer in that capital for the acquisition of his secret, for which he was to pay a thousand pounds. He was shown all the processes, and saw a beautiful color produced, yet he found not the least difference in the French mode of fabrication and that which he had constantly adopted. He appealed to the manufacturer, and insisted that he must have concealed something. The manufacturer assured him that he had not, and invited him to see the process a second time. He min-

utely examined the water, and the materials, which were the same as his own, and, very much surprised, said, 'I have lost my labor and my money, for the air of England does not permit us to make good carmine.' 'Stay,' says the Frenchman, 'do not deceive yourself; what kind of weather is it now?' 'A bright sunny day,' said the Englishman. 'And such are the days,' said the Frenchman, 'on which I make my color. Were I to attempt to manufacture it on a dark or cloudy day, my results would be the same as yours. Let me advise you, my friend, to make your carmine on bright sunny days.' 'I will,' says the Englishman, 'but I fear I shall make very little in London.'"

Now this anecdote may be depended upon; for a person so distinguished as a chemist and natural philosopher as Sir Humphrey Davy, would not have related a story in regard to the effect of light, which was contrary to truth, or which he did not directly know to be true.

And if the effect of sunshine is so great on color, as that the increase or decrease of its brilliancy should cause a totally different result to follow from the combination of precisely the same chemical ingredients, it will readily follow that much more effect will be produced by its excess in one case, or almost total exclusion in another, upon hues so changeful as those which glitter on the scales of a fish.

That in a pure limpid rapid stream, rushing over a bright gravelly bed, through open fields, where no envious boughs intercept the sunlight, and in a dark turbid pond, the waters of which are saturated with the draining of peat-bogs, or with the juices of decomposed vegetable matter, and overshadowed by thick evergreen umbrage, the light even of the most gorgeous noon will be transmitted in very different degrees, and produce very different effects both of color, heat and radiance, any person can judge, who will observe the sunbeams as they fall through a sheet of pure plate-glass, or a thick green bull's-eye; and that the consequences may easily be as they are stated above, he will, I think, be satisfied.

Now, in the first place, analogous to this, and in corroboration of this view of the subject, I will remark here, that one of the principal external differences between the American and the European Trout, is precisely as might be expected under the views taken above. The climate here being far more sunny, the atmosphere drier and more transparent, and the weather more constant and lightsome, we find that

the Trout of America is a lighter colored, brighter, gayer, and more gorgeous creature than his European kinsman. And, farther yet, we shall find that in the purest and most limpid streams, in the lakes which to the most transparent waters add the sunniest expanse, the brightest and most beautiful Trout are taken; while in black boggy waters, or in forest-embowered rivers, the colors of the fish are rather dim and dusky.

This is not, however, merely a matter of theory and analogy, for experiments have been actually tried on this point, and with perfect success. Mr. Agassiz assures me that he has repeatedly known very brilliant and gaily-colored fish, taken in clear and sunshiny waters, and transferred to neighboring pools or streams of totally different character, to begin to fade and lose the intensity of their colors, sensibly, within a very few hours, and after a few days or weeks, to be entirely undistinguishable from the native fish of the place.

This accounts, at once, for the facts so often stated, and seemingly so inexplicable, of two lakes communicating with each other by a common channel, and containing two distinct varieties of Trout, one beautiful, and excellent upon the table, the other dark-colored and ill-tasted, the two varieties never being known to intermingle, or to exchange from one to the other water.

The explanation of this apparent phenomenon is, that the change produced by passing from the dark and peat-soiled waters of the one lake, to the limpid element of the other, in the fish, is so rapid, that they assimilate themselves almost instantaneously, in outward appearance, to the fish into whose society they have emigrated.

The lakelet, known as Stump-pond, on the northern side of Long Island, which, as its name indicates, is filled with the butts of dead trees, and saturated with vegetable matter, has been for many years famous, or I should rather say infamous, for the ugliness, want of brilliancy, and indifferent quality in a culinary point of view, of its Trout, as compared with those of the bright and transparent mill-ponds and rivulets of the south side. No one, however, has ever thought of erecting them into a species, or of designating them as *Salmo Stumppondicus*, seeing clearly the cause and effect; and lo! now of late years, as the cause is passing away with the process of time, the effect is also disappearing; as the vegetable matter is decaying, being absorbed. and swept away,

and as the purifying influences of the springs are gaining upon the corrupt and stagnant qualities of the pond, the fishes are likewise becoming brighter and better. In the course of a few more years, it is probable that they will be scarcely distinguishable from the finely-formed and finely-colored fish of Snedecor's or Carman's streams, at Islip and Fireplace.

Doubtless, other causes besides the influence of light, have their effect both upon the appearance and the flavor of the Trout; we have seen that their color is affected by the shell-fish, or even the larvæ of flies, on which they feed; we have also seen that they increase in weight, size, and fatness, according as they are nourished with worms, with small fry, or with water-flies; and no one in his senses can doubt, I imagine, that if these fish which have obtained scarlet spots, and become golden-finned and golden-bellied by feeding on shell-fish, or crustaceous-cased insects, were confined upon a regimen of dew-worms or May-flies, they would gradually relapse into their original coloring.

Nor can it be supposed, I think, judging from all analogy, but that the Gillaroo Trout, kept permanently in situations where it could never find either shell-fish, or any hard edible substances, would gradually lose the distinctive hardness of its stomach, as well as its characteristic coloring. The probability is, that the young fry of a finger's length, spoken of by Sir Humphrey, would lose the distinction individually; and I do not at all conceive it likely that the characteristic would survive through two generations from the largest adult.

While I am writing on this point, I will cite a fact, though it belongs with greater propriety to the history of another fish, the Greatest Lake Trout, *Salmo Amethystus*, when describing which, it will be noticed more fully. This is simply that in the same lakes, Huron and Superior, this same fish exists in three different states of color, so totally dissimilar, that it is supposed by the French inhabitants of the shores, to be three distinct fishes, and is known by three distinct names, according to the situations in which it is found, and by which its coloring is evidently affected.

Drawings of the fish in two of these stages are now lying before me, and will be presented to my readers under the proper head; here, it will be sufficient to state that, but for the shape of the head and gill-covers, the form of the fins and the number of the fin-rays, things not

examined by the superficial observer, they would pass for different fish. These three varieties are known as the *Truite de Grève*, *Truite des Battures*, and *Truite du Large*; or, Trout of the muddy bottom, Trout of the rocky shores, and Trout of the open waters; the first being a dull mud-colored fish, the second bright and handsomely mottled, and the last bluish and silvery, and resembling more a clean-run Salmon than a Lake Trout.

This is so fairly a case in point, that I cannot resist quoting it here, as it is perfectly evident that there is no real distinction whatever; and if this be so of one variety or species, there is no reason for doubting that like causes will produce like effects, in the congenerous species. Again, it is not only possible, but in the highest degree probable, that the different chemical substances which are held in solution by the waters of various streams and lakes, may not be without their influence on the coloring of their inhabitants. I think I have myself observed, both on this continent and in Europe, that the Trout in streams flowing from lime-stone formations are more lustrous, and more strongly spotted than those of duller and less lively waters.

That the fish of streams rushing rapidly over pebbly beds, are superior in all respects, both of appearance and quality, to those of ponds or semi-stagnant brooks, is confessedly notorious; but this may arise not so much from any particular components of the waters themselves, as from the fact that rapidly-moving and falling water is more highly aërated, the atmosphere being more freely intermingled with it, and therefore more conducive to the health and condition of all that inhabit it.

Independently of DeKay's *Salmo Erythrogaster*, I find mention made in the "American Angler's Guide," of *the Silver Trout*, *the Common Trout*, *the Common Trout of Massachusetts*, *the Black Trout*, *the Sea Trout*, and *the Hucho Trout*, although to none of these except the last, is any scientific name attached.

I beg, however, to assure my readers, that there are no such distinctions existing in nature. The Silver Trout, which is stated to be found in almost all of our clear, swift-running northern streams, and to weigh from one to fifteen pounds, is in no respect a different fish from the common Trout of Long Island; nor does that fish differ in any, the

smallest, particular from the Trout of Massachusetts, or of any other place in the United States, where the Trout exists at all.

I wish greatly, that the author of the "American Angler's Guide" had given some authority for his statement, that this fish is taken in this country up to fifteen pounds, or even up to half that weight. I have myself some slight suspicion that such is the case rarely, in the northern lakes—I do not mean the great lakes—of New York and New England; and that it is there mistaken for some new species, or a variety of the Lake Trout, from which it differs far more, in all respects, than it does from the true Salmon.

I have, however, never been able to gain any authentic information of any true Brook Trout having ever been taken in Canada, or in the United States, above the weight of ten pounds; and that size is of so rare occurrence, that when one is taken, it is regarded as a monster, and is heralded from one end of the country to the other, through the public press. I have myself seen a Trout, taken in the winter through the ice, in Orange county, New York, which lacked but a few ounces of six pounds. I know several instances, not exceeding half-a-dozen, of fish varying from four to five pounds, taken, some on Long Island, some in the interior, within twelve or thirteen years, but I have never heard it asserted that a fish of larger size has been taken in America.

There is, I am aware, a tale that many years since, a Trout of eleven pounds was taken at Fireplace; and a rough sketch of the fish is still to be seen on the wall of the tavern bar-room. I know, however, that this fish was considered at the time, by all the true sportsmen who saw it, to be a Salmon, and the sketch is said to bear out that opinion, though I do not myself understand how a mere outline, not filled up, can convey any very distinct idea of the species intended.

Suffice it, that it is not only not on record that any Trout of seven pounds or upward has been captured on this continent, but that old fishermen will assert positively, that they never grow to be above five pounds in weight; and very coolly and civilly imply to you that you are speaking falsely, when you tell them that Trout from ten to twenty pounds are no great rarities in England, and that they are taken even of a much greater weight. The fact, on this point, is, that Trout of ten or even fifteen pounds—I mean the common speckled Trout, *Salmo Fario*, analogous to our Brook Trout—are more common in

some of the large rivers of England, and large lakes of Ireland, than fish of four pounds are here. There probably rarely passes a season in which ten or a dozen of these large fish, exceeding ten pounds' weight, are not taken in the Thames. I do not think that here, on an average, one four-pound fish is killed annually; and their rarity is abundantly proved by the fact that their capture is always recorded.

The Bashe's Kill, in Sullivan county, to which the Silver Trout is assigned, is a pretty Trout stream, but in no wise superior to a thousand others throughout the country; and, like all mountainous streams, is far more celebrated for the number, than for the size of its fish.

In both respects, it is surpassed by many of the Pennsylvanian streams of the same neighborhood, falling into the Delaware from the westward; and in the size and excellence of its Trout, it cannot sustain a moment's comparison with the fish of the Long Island streams on the south side. Its fish, it is needless to add, are in no wise distinct.

The Trout of Massachusetts are identical with the common Trout of New York; the figure at the head of this article is from a specimen taken in Massachusetts. I have caught Brook Trout myself from Maine to Pennsylvania, and can safely pronounce on their identity. The *Black Trout* is merely an accidental variety; the colors, taste, and habits of which are affected by the peaty waters, and stagnant flow of the lazy streams in which it is found, and from which it obtains a corresponding dinginess of hue, muddiness of flavor, and laziness of character.

With regard to the *Sea Trout*, as it is here called, I shall quote a few paragraphs from the pages of "Smith's Fishes of Massachusetts," although I cannot say that I esteem it a work on which much reliance can be placed, as the author appears, from some of his statements, to be a writer of more rashness than discrimination, and more ready than qualified to give his opinion decidedly, and without appeal.

These qualities are rendered sufficiently apparent by his indulging in a violent tirade against Dr. Mitchil, of New York, whom he accuses of vanity and presumption, in affixing his own name to the Striped Bass, which he, Smith, asserts to be "*a common table fish, known from time immemorial all over Europe.*"

It is, I presume, at this day entirely unnecessary to state, that Dr. Mitchil was perfectly right as to the distinct character of the American fish, and its being utterly unknown, and non-existent in Europe; and Smith is wrong in every possible particular; the fish to which he refers it, the Sea Bass of Europe, *Labrax Lupus* of Cuvier, *Perca Labrax* of Linnæus, being altogether a different fish, though of the same family, perfectly distinct both in habits and appearance.

Of the Sea Trout, Smith says:—

"They are found, as may be inferred from the name, in the salt and brackish waters of tide rivers and inland bays, in various parts of this and the adjoining States. When taken from the salt-water early in spring, they are in high perfection, and nothing can exceed their piscatory symmetry. The general appearance of the skin is of silvery brightness, the back being of a greenish and mackerel complexion; the spots of a vermillion color, mixed with others of faint yellow, and sometimes slightly tinged with purple, extend the whole length on either side of the lateral line; the fins are light in color and firm in texture, and, together with the tail, are rather shorter and more rounded than the common Trout. They have a firm compactness of form from head to tail, which accounts for the superior sprightliness of their movement; the head and mouth are very small, and the latter never black inside, like the common or fresh-water Trout; the flesh is even redder, or rather, we would say, more pink-colored than the Salmon, to which, by many, they are preferred as a delicacy, having, like the Salmon, much of what is called curd, or fat between the flakes.

"A fish of a pound weight measures about eleven inches in length. Their average size is considerably larger than the fresh-water, or Brook Trout—having been taken in the waters to which we refer—Waquoit bay, upon Cape Cod, and Fireplace, Long Island—of nearly five pounds' weight; such instances, however, are rare, three pounds being considered a very large fish. We do not remember ever seeing a poor fish of this kind taken. They are invariably in good condition, let the size be what it may," &c., &c.

I have quoted this passage, merely for the purpose of warning my readers, in a few words, that there is no such thing; and that the whole of the above refers merely to the Brook Trout.

All the varieties and species of *Salmonidæ*, with the exception of

some of the large lacustrine species, are migratory whenever it is in their power to be so; and run down to the sea, annually, for the purpose of recruiting themselves after spawning, whence they return, like the Salmon and Salmon Trout, in excellent condition, perfect symmetry, and in the highest stage of external beauty.

The non-migratory habit of the large lacustrine species does not depend, in any degree, on their position or situation above impassable cataracts, or in waters without outlets, although they are frequently found under such circumstances, for they do not run down to the sea, even when they have it in their power to do so; as, for instance, in Lake Ontario, where they are found abundantly; nor, on the other hand, do they proceed far up the rivers, for the purpose of spawning, being content to deposit their ova on the gravel beds of shoal water, at the margins of their lakes, or at the mouths of the brooks which discharge into them.

Of the migratory species, the Brook Trout is one; and when it is in his power, he invariably descends to the sea, and returns to perpetuate his species by depositing his spawn in the clearest, coolest, and most limpid waters which he can find. There can be, I think, little doubt that, like the Salmon, he returns to the streams in which he has been bred.

There are, doubtless, hundreds of mountain brooks throughout the country, divided by impracticable falls, natural or artificial, from the sea; and although these teem with hordes of Brook Trout, they never attain, in them, to any size; the mature adults being scarcely larger than the young fry, while they are still marked with the transverse bandings of the Parr. The flesh of this little fish never attains the rich cherry-colored tint of the Trout, in full season, but is of a pale yellowish flesh-color, and has neither the richness nor the flavor of the sea-run variety. That these swarms do not visit the sea, is not because they lack the will, but because they have not the power; and it is possible that the habit of running seaward being precluded generation after generation, the instinctive desire for it passes away in the process of time. But that the degeneracy, both in size and flavor, is caused by the inability to recruit their powers in the salt-water, is rendered evident by the facts I have already quoted concerning the falling off of Salmon and Salmon Trout, both in size and appearance,

when intentionally confined in fresh-water lakes; as well as by the enormous rapidity of growth manifested in the Salmon smolts, which, having been a year and a half in fresh water, attaining a length of seven or eight inches, and a weight of about so many ounces, after a visit of a few months to the sea, return not only reinvigorated in condition, but increased in bulk to seven or eight pounds weight.

This accounts very readily for the superior size of what Mr. Smith designates as a distinct species of Sea Trout, which is, in reality, only the Brook Trout on his return from the sea. The circumstances of its condition speak for themselves.

Who ever saw a Salmon fresh-run from the sea, of whatever size or age, otherwise than in excellent condition and of rare beauty? Who ever took a spent fish, of the same species, that was not ugly, lean, discolored and uneatable?

The silvery whiteness and the bluish back of the Sea Trout, as described above, is peculiar to all fresh-run fish of this family; and in Scotland a skilful Salmon-fisher will tell you, at a glance, how many tides a fish has been in the river, merely from seeing him leap at a fly or a minnow.

All the other marks, cited by Smith as characteristics, are merely signs of condition, as the brilliancy of the coloring, the breadth and thickness of the fish, and the comparative smallness of the head, which is produced by no alteration whatever of that portion of the body, but by the increase and development of the body itself, which at this season and stage of the animal, is equal in its circumference to one-half its length.

It is well known and undisputed in Long Island, that the Pond-fish and Creek-fish, as they are termed, pass to and fro between the fresh and the salt-water; and although the Creek-fish are occasionally there called Sea Trout, it is by no means as implying that they are of a different species, but merely indicating the water in which they are taken.

The fish to which I referred above in my introductory remarks on the *Salmonidæ*, as being perhaps a distinct kind, analogous to the *Salmo Trutta* of Linnæus, is by no means this Trout, but a very different animal, found only in the eastern and north-eastern rivers, which empty their waters into the Bay of Fundy or the Gulf of St. Law-

rence. This Trout is found only in these rivers, and so far as I can learn, instead of running up to the head waters of the streams in order to spawn, comes up only to the foot of the first rapids with the flood, and returns with the tide of ebb. Even about this Trout I have my doubts, though before finishing this work, I hope to have more definite information on the subject.

With regard to the fish mentioned above, I have no doubts whatever. It varies in nothing from the common Trout but in those particulars, which prove that it has run to the salt-water.

The last-named variety, *Salmo Hucho*, which is also cited, on the authority of Smith, as a fish of New England, stands in the same category with the last-mentioned.

There is no such fish on the continent of America; and, indeed, even on the European continent, where alone it is found, its limits are narrower, and its geographical range smaller, than that of any known fish. It is, in fact, found only in tributaries of the Danube, more especially in the Traun, the Saave, the Draave, and the Laybach rivers. Some writers have supposed him to be purely a fresh-water fish, but it is believed by Davy, that, in his largest state, he is an inhabitant of the Black Sea. He is said to spawn in the Muir between March and May, and in the Danube in June.

He is the fiercest and most predatory of all the *Salmonidæ*, and it is useless to attempt the capture of large ones with the fly. Spinning tackle, the bleak, the minnow, and small trout, or parr, are the only modes, and the only bait which he cares to take.

In shape, he resembles an ill-fed Trout, being the longest and slenderest of all the *Salmonidæ*, the ratio of his length to his girth being as 18 to 8, or in well-fed fish, 20 to 9. He has a silvery belly, and *dark spots only* on the back and sides, which, in itself, shows sufficiently that he is not the fish described by Smith under this name.

Smith's fish is described "as resembling much the Sea Trout; but being found, on a careful examination, to be more slender, and to have a greater number of *red* spots. The back is dusky; the ventral fin has a yellowish tinge; all the others are of a palish purple; the tail is forked, and the fish measures sometimes four feet through—ordinarily they are only about two, and are caught by the hook. This Trout certainly exists in the large rivers and ponds in the interior, but

deteriorate in size. They are brought from New Hampshire in the winter, frozen, for the markets, and from the northern parts of Maine, where specimens have been taken as large as any produced in the great rivers of Europe."

This passage I quote from the "American Angler's Guide," and I do so, to declare that this fish is, in the first instance, not the Hucho; and, secondly, to point out that no such fish has ever been authentically produced at all. A Hucho of the Laybach, of two feet in length, by eleven inches girth, and three inches thickness, was found to weigh four pounds two and a half ounces. Now, fishes increase in weight in the ratio of their breadth and depth, not of their length, a Trout of thirty-one inches weighing seventeen pounds. Whether any Trout or Salmon has ever been taken of full four foot in length I greatly doubt. If so, its weight must be enormous; the largest Salmon ever known, the eighty-three pounder, which came into the possession of Mr. Groves, the London fishmonger, in 1821, is described as having been a short fish for the weight, and I am convinced would not have measured four feet.

Now it remains to inquire what is this fish which Mr. Smith designates as the Hucho; and is there any such fish in existence elsewhere than in that gentleman's imagination?

Now I fear the answers to these questions must be in the negative, since, most assuredly, there is no scarlet-spotted Trout on record at all approaching to the size described by Mr. Smith, which we must reckon at the rate of from seventy to one hundred pounds weight.

The *Salmo Amethystus*, Mackinaw Salmon, which does grow to that prodigious size, and which answers to many of the particulars specified, is never *scarlet-spotted*, nor does the *Salmo Confinis* of Dr. Dekay ever show a red spot.

One or both these fish do exist in the lakes of Maine and New Hampshire, from Temiscouata to Winnepisiogee, and it may be that this is a mis-description of one of these. If it be not, it is either a new and nondescript fish, of the kind mentioned as killed by the President of the Piseco Club, "with red flesh, weighing twenty-four pounds," or it is a very large specimen of the Brook Trout, and, moreover, wonderfully exaggerated in dimensions.

It is a remarkable peculiarity of the American Trout, that it is

seldom found—except when, as a very rare exception, one is taken in the drawing the sean—in any large rivers. I have never heard a solitary instance of a fish being taken either with the bait or the fly, or even with the spinning tackle, in any large stream, unless quite at its head waters, where it is *not* large. All the Trout which are taken, are taken in what are here called creeks, and what would in Europe be described as large brooks, or small rivers of the sixth or seventh class. In these the run of fish greatly exceeds the dimensions of the little inhabitants of the mountain brooks. This, in addition to other facts, at the knowledge of which we have arrived through the experiments recorded heretofore as made in England with regard to the growth of fishes, lead us irresistibly to the conclusion that the use of large expanses of suitable water is necessary to the Trout, in order to their arriving at any great magnitude.

It is, therefore, quite within the range of possibility, that in the large pure inland lakes, supplied by the limpid springs of the mountains, the Brook Trout of America may attain a growth analogous to that of the well-fed and full-grown Trout of the Thames, the Stour, and the Irish lakes; a growth which the smallness of the streams which they do frequent, and their inexplicable avoidance of the large and navigable rivers, prevent them from acquiring elsewhere.

I cannot say that I shall be at all surprised should it turn out, on investigation, that the Brook Trout, *Salmo Fontinalis*, is indeed occasionally taken up to the weight of twenty or twenty-five pounds, especially in the waters of Hamilton County, and is now confounded, on account of its size, with the great Lake Trout—not equal to it, whether as a fish of game or a table fish—of the same waters.

The Brook Trout proper of America is one of the most beautiful creatures in form, color, and motion, that can be imagined.

He is slenderly and gracefully formed, though rather deeper in proportion to his length than the Salmon, and far more so than the Lake Trout.

In a well-grown and well-fed fish, the length of the head to the whole body is about as one to five; and the length of the whole body to the breadth, at the origin of the first dorsal fin, as four and a half to one. A line drawn from the front teeth to the posterior curve of the gill-cover, which is nearly semicircular, is nearly parallel to the

lateral line, and will divide the body into two nearly equal parts, the convexity of the back and belly being also nearly equal. The centre of the dorsal fin is as nearly as possible in the centre of the length of the body; and the second dorsal fin is equidistant from the posterior extremity of the dorsal, and that of the caudal fin. The origin of the ventral fin is vertically under the origin of the dorsal; and the origin of the anal equidistant from the termination of the ventral and the origin of the caudal fin. The pectoral fin is about two-thirds the length of the head.

The pectoral fin has eleven rays, the first dorsal eleven, the ventral eight, the anal fifteen, the caudal nineteen. The second dorsal rayless and adipose.

The head is smooth; the body covered with small and delicate scales. Teeth on the vomer, the palatine bones, and all the maxillary bones. The head and upper part of the back are beautifully mottled, like tortoise-shell, with brownish green and yellow spots; the gill-covers silvery, with yellowish and pink glazings; the sides, about the lateral line, lustrous metallic bluish gray, with large yellow spots more brilliant than on the back. A double row of vivid vermillion specks, irregular in number, along the lateral line, above and below it. The sides and upper portion of the belly glazed with bright carmine; the belly silvery white; the pectoral fins reddish yellow, with a dusky anterior margin; the ventral fins the same, with the margin blacker and more definite; the anal fin red, with a broad white anterior margin, and a black lunated streak between the white and red; the caudal fin purplish brown; the first dorsal golden yellow, barred and spotted irregularly with jet-black; the second dorsal similar to the back.

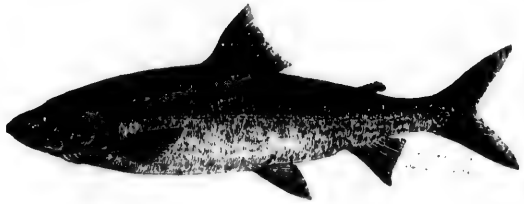
Such, briefly, are the characteristics and general appearance of this beautiful and interesting fish, which in every part of the world where angling is resorted to as a sport, and not merely as a mode of obtaining subsistence, is the great object of the scientific fisherman's pursuit.

There is no sportsman, who is actuated by the true animus of the pursuit, who would not prefer basketing a few brace of good Trout, to taking a cart-load of the coarser and less game denizens of the waters; nor, whether we consider his wariness, his timidity, his extreme cunning, the impossibility of taking him in fine and much-fished waters, except with the slenderest and most delicate tackle; his bold-

ness and vigor after being hooked, or his excellence on the table, shall we wonder at the judgment, much less dispute it, which, next to the Salmon only, rates him the first of fresh-water fishes. The pursuit of him leads us into the loveliest scenery of the land; the season at which we fish for him is the most delicious, those sweetest months of spring—when they are not, as at present, the coldest and most odious of the year—the very name and mention of which is redolent of the breath of flowers, the violet, the cowslip, and the celandine, which plunge us into a paradise founded upon the rural imaginings of the most exquisite of England's rural bards, until we are recalled from our elysium by a piercing gale from the north-east, and perhaps a pelting hail-storm, bidding us crush our wandering fancies, and teaching us that spring-time is one of those pleasant things which occurs twice perhaps in a lifetime in the United States of America.

The habits of the Trout have been already discussed so fully in the earlier part of this article, as well as the nature of his food, that I shall defer further mention of these topics, until I come, in the second part of this volume, to the taking of him with the natural or artificial bait, which is most intimately connected with the consideration of his prey and his haunts, so that in that place these will be most suitably discussed.

Note to Revised Edition.—For some farther particulars as to the size of the Brook Trout, see Supplement. Art. Brook Trout, *Salmo Fontinalis*.



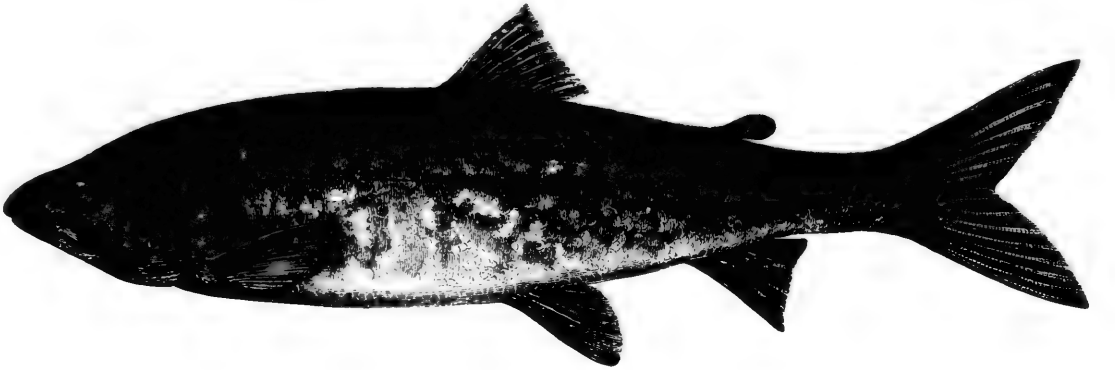
VARIETY: TRUITE DE GREVE

THE GREATEST LAKE TROUT.

MACKINAW SALMON—NAMAYCUSH—SALMON TROUT.

Salmo Amethystus; Mitchil, DeKay.—*Salmo Namaycush*; Pennant, Richardson.

THIS noble and gigantic species, which equals, or even exceeds, in size, the true Salmon, *Salmo Salar*, and is by far the largest of all the lacustrine or non-migratory *Salmonidæ*, is found in all the great lakes to the northward and westward of Lake Erie, to the Fur countries and the Arctic region. It is not found in any tidal rivers, and never visits the sea. The Falls of Niagara present an insuperable obstacle to its descent into Lake Ontario; but whether it exists in any of the smaller lakes of New York, or the eastern waters of New England, does not as yet appear to be fully ascertained. It has been taken by the companions of Dr. Richardson and Sir John Franklin, in Winter lake, lat. 64½° N.; but I cannot learn that it has been discovered in any of the waters which discharge themselves southward by the Mississippi or the Missouri. I doubt not at all that it exists in the waters of the Great Basin and the Columbia, and that it is one of the fish mentioned by Col. Fremont, as taken in them, during his explorations. The name



GREAT LAKE TROUT. MACKINAW SALMON.

SALMO AMETHYSTINUS. MITCHIL.

ON WOOD, BY H.W. HERBERT from a drawing by E. CABOT, ESQ.

of Mackinaw Salmon, by which it is commonly known, is therefore a misnomer, since it is no more peculiar to the straits of Michilimackinac than to any other locality between the Falls of Niagara and the Arctic ocean. The term Namaycush, which Pennant adopted, and Dr. Richardson has retained, both as its English name and its scientific distinction, is no more than its denomination by the Cree Indians, who term it Nammēcoos, and I confess I think it in both respects preferable to any other; for Dr. Mitchil's scientific name *Amethystus*, which he gave it in consequence of a faint purplish tinge perceptible on the teeth, gums, and roof of the mouth, is founded on a peculiarity so slight—I speak on the authority of Prof. Agassiz—as in many specimens to be scarcely distinguishable; while it has no name in the English language defining it from the Siskawitz, inhabiting the same waters, or from the common Lake Trout, *Salmo Confinis*, of the New York and New England lakes.

It is a remarkable fact, that at least one-half of our inland or fresh-water fishes have no correct English names, no names at all in fact, but such arbitrary and erroneous terms as were applied to them ignorantly, by the first English settlers in the districts in which they are found, and have been adhered to since for lack not of *better*, but of *any* real names. Thus the peculiar fish of Lake Otsego, though fully ascertained to be, and scientifically distinguished as, one of the family *Salmonidæ*, and defined as *Coregonus Otsego*, has, to this day, no other appellation in the vernacular than the absurd misnomer of Otsego *Bass*, to which species it has no relation whatsoever. The same is the case with the fish called "*Trout*," by the inhabitants of Carolina and the neighboring States, which is mentioned as the "White Salmon," by Smith, in his history of Virginia; and which is said to abound in the rivers of Pennsylvania. This is, I doubt not, the fish alluded to by a recent writer in the "Spirit of the Times," as the Susquehanna Salmon, unless perchance another nameless fish, the *Perca Lucioperca*, is intended. The southern Trout is of the Pearch family—nothing more remote from Trout—though in form it has some resemblance to the *Salmonidæ*. It is the *Gristes Salmoïdes* of Cuvier, the *Labre Salmoïde* of Lacépède, both terms indicating its family as of the Pearch or Bass, and its similarity to the Salmons; but it has no English name at all, unless we adopt the vulgarism of calling it a

Trout, which is no less absurd than it would be to call a Pickerel, Salmon.

These prevalent misnomers, and this total absence of real and rational names, are of great disadvantage, creating excessive confusion, and puzzling all, except the scientific naturalist. It is much to be regretted that the Indian terms have not always been sustained; for when interpreted, they are almost invariably found to be truly distinctive; and it is greatly to be desired that on the discovery of new genera, or varieties, this system of nomenclature may be adopted, as it has been by Prof. Agassiz with regard to the Siskawitz, a new lacustrine Trout, discovered by him during the past summer in the great waters of Huron and Superior.

With regard to those misnamed long ago, the misnomers of which have become familiar, and as it were stereotyped by the lapse of time, it is difficult to say what is to be done, or how the evil is to be remedied; and it is to be feared that the *Coregonus* of Otsego will remain the Otsego Bass for ever; since [although nothing is easier than to explain, and even to prove, that the fish is in no respect a Bass] when he who has been accustomed so to call it, but who is open to conviction, enquires if I must not call him Bass, what is his name? there is no answer to the question, but that he is a *Coregonus* of the Salmon family.

To return, however, to the Greatest Lake Trout, Mackinaw Salmon, or Namaycush—it is also called, in common with all the other large Lake Trout, Salmon Trout; but this is too absurd even to be admitted as a provincial synonyme, since the Salmon Trout is a Sea Trout, and is moreover found on the eastern shores of this continent. This is probably the largest of the Salmon family in the known world; hence, I have ventured on my own authority, to designate him as the Greatest Lake Trout, in order to distinguish him not only from the Siskawitz and the *Salmo Confinis* of DeKay, but also from the common Trout, *Salmo Fontinalis*, when taken of large size in the small inland lakes.

The average weight of this monstrous fish in Lake Huron is stated by the fishermen to be seventeen pounds, but they are constantly taken of forty pounds weight, and not at all unfrequently of sixty or seventy.

It is stated by Dr. Mitchil, that at Michilimackinac, they have been known to attain the enormous weight of one hundred and

twenty pounds, with which the dimensions of the same fish as described by La Hontan, in his *Mem. de l'Amerique*, would seem to agree—"*Les plus grosses Truites*," says he, "*des lacs ont cinq pieds et demi de longueur et un pied de diametre*"—but at the present day, specimens of this gigantic magnitude are never seen, and seventy pounds may be taken as the limit of their ordinary growth. Even this, however, is a size to which the Sea Salmon has scarcely been known to attain.

It is a bold, powerful and tyrannical fish, with which no other inhabiting the same waters can compete. The Gray Sucking Carp, *Catastomus Hudsonius*, the Methy, a species of fresh-water Ling, *Lota Maculosa*, and the Herring-salmon, *Coregonus Artedi*, form the favorite food of this voracious fish, the stomach of which is constantly found crammed with them almost to repletion; but he will bite ravenously and fiercely at almost anything, from a small fish or a piece of pork, to a red rag or a bit of bright of tin, made to play rapidly through the water.

In form, he considerably resembles the common Salmon, though he is perhaps rather deeper in proportion to his length. His head is neat, small, and well-formed, with rather a peculiar depression above the eye, and the snout sharply curved and beak-like. The head forms nearly a fourth-part of the whole length of the fish; the skull is more bony than that of the common Salmon, the snout not cartilaginous, but formed of solid bone; the jaws are very strong, the upper overlapping by about half an inch the lower, which is strongly articulated to the preoperculum and to the jugal bone. The eye is midway between the snout and the nape, and twice as far from the hinder edge of the gill-cover as from the tip of the snout.

Of the gill-covers, the preoperculum is curved and vertical, or nearly so; the suboperculum is deeper than in the other Trouts, and is jointed at its inner angle to the operculum and preoperculum by a slender process concealed by these bones. Its edge forms fully one half of the border of the free gill-cover, and is finely grooved. The gill-rays are twelve in number.

The dental system of the Mackinaw Salmon is very complete, and more formidable than in any other member of the family. The intermaxillaries and labials, as well as the palatine bones, lower jaws and tongue, are armed with very sharp and strong conical curved teeth;

those on the vomer consisting of a circular cluster on the knob of that bone, and of a double row extending at least half an inch backward.

The dorsal fin is situated in the middle of the fish, and contains fourteen rays, the eighth ray being exactly central between the snout and the tip of the central caudal fin-ray. The second adipose dorsal fin is small and obtusely formed. The caudal fin has nineteen, the ventrals each nine, the anal eleven, and the pectorals each fourteen rays. The origin of the ventral fins is slightly posterior to the centre of the fish.

Such are the principal structural distinctions of this noble fish, and I have entered into these rather at length, since by them only can he be distinguished from his lake congeners. I have already observed the great differences existing in point of color and markings between fish of the same species found in different waters, throughout this family, and endeavored to show the impropriety of founding specific distinctions, or even permanent varieties, by reference to these alone, without reference to structure. In the *Salmo Fontinalis*, common Brook Trout, this is easy to be noticed, but in none of the *Salmonidæ* with which I am acquainted are the differences of color and marking so broad and distinct as in different individuals of this species. I have before me, as I write, three colored representations of this same fish, two water-color sketches, by Mr. Cabot, of Boston, and one, a colored lithograph, in Dr. Richardson's Fauna Boreali-Americana; and these three I am certain would be pronounced by nine persons out of ten not accustomed to observe structural differences, three different fish. Indeed, I am informed by Prof. Agassiz, that by the French residents on lakes Huron and Superior, they are actually believed to be three distinct fish, and are known by three different names, from the localities in which they are found, viz. :—*Truite des Battures*, Trout of the rocky shallows—*Truite de Grève*, Trout of the muddy shoals—and *Truite du Large*, Trout of the deep open waters. The first of these fish is represented in the large plate facing this paper, and the second in the cut at the head of page 104. The third is thus described in Dr. Richardson's work named above :—"The head, back and sides have a dark greenish gray color, which when examined closely is resolved into small roundish yellowish gray spots on a bluish gray ground, which covers less space than the spots; the latter are most evident on

the sides, each of them including three or four scales. The uncovered portion of each scale is roundish, and its convex centre, having a grayish hue and silvery lustre, is surrounded by a dark border of minute spots, which are deficient or less numerous on the yellowish gray spots, and also on the bluish white belly. The dorsal and caudal fins have the greenish gray tint of the back, and the ventrals and anals are muddy orange; this color also partially tinging the pectorals. The irides are bright honey yellow with blue clouds."

I will merely add to this, that in the colored lithograph, which is beautifully executed, the fish has a bright, clean, silvery appearance, with a prevalence of bluish gray hue, and a silvery belly, precisely in accordance with a description given to me by Prof. Agassiz, of the *Truite du Large*, for in this condition I have never myself seen the fish.

In the drawings by Mr. Cabot, from which the wood-cuts to this paper are taken, and the correctness of which I had an opportunity of verifying by personal inspection during a recent visit to the upper lakes, the *Truite des Battures*, large plate facing page 104, is of a dark bluish green on the back, fading into a greenish brown about the lateral line, thence into a greenish yellow on the sides, and into bluish silver on the belly, the whole largely marked with distinct irregularly-shaped spots—light green on the dark back, yellowish on the brown green of the sides, and silver on the bluish belly, becoming larger as they descend from the back, and at last melting into the brightness of the abdomen. The dorsal and caudal fins of the same color as the back, with irregular yellowish green spots, the latter faintly margined with dull red; the pectorals bluish gray, margined with the same color, and the ventrals and anals broadly margined with dusky vermillion. The third variety, the *Truite de Grève*, is generally of a muddy greenish brown, darker and greener on the back, browner on the sides, and yellowish gray on the belly. The spots in this variety are much smaller than in that last described, and far less definite both in shape and color, so that the fish might be said to be mottled or clouded, rather than spotted. The fins are all of the same dull, dingy, olivaceous color, similarly clouded, with the faintest possible indication of a ruddy margin on the pectorals, ventrals, and anals, but no tinge of that color on the caudal fin. Both these varieties I have

seen and compared within the last month, recently taken on Lake Erie, and I am informed that the color and flavor of the fish is affected, as might be expected, by the same circumstances which produce the difference of external coloring, the brighter fish having the redder flesh and the higher and more delicate flavor.

In the deep cold waters of Lake Huron, all the fish are infinitely superior, both in firmness and flavor, to those of the comparatively shallow and muddy waters of Lake Erie, so much so, that those who have been accustomed all their lives to the White-Fish, *Coregonus Albus*, of the lower lake, speak of that of Lake Huron as entirely a different fish as regards its epicurean qualities.

"The flesh of the Namaycush," says Dr. Richardson, "is reddish or orange colored, being paler when out of season. When in good condition, it yields much oil, and is very palling to the appetite if simply boiled, but roasting renders it a very pleasant article of diet. The Canadian voyageurs are fond of eating it in a frozen state, after scorching it for a second or two over a quick fire, until the scales can be easily detached, but not continuing the application of the heat long enough to thaw the interior. The stomach when boiled is a favorite morsel with the same people."

Although I have seen this fish at almost every season of the year, the flesh of none has exceeded what I should call a dull, buffish flesh-color, not approaching to what, on the most liberal construction, could be termed red or orange color. It is in my opinion a coarse, bad fish on the table, at once rank and vapid, if such a combination can be imagined, and it is decidedly the worst of the large lacustrine Trouts, few of which in either hemisphere are either delicate or high-flavored. I doubt not, however, that when fresh out of the water, in the cold deep lakes of Huron and Superior, crimped and broiled or roasted, it is far better than could be supposed by one who has eaten it only after being many hours out of its native element.

In no respect, however, must we regard the opinions of sportsmen more *cum grano* than in their appreciation of the qualities of fish, flesh or fowl in an epicurean point of view. They are apt to be very hungry when they eat, and who does not know the effect of the Spartan sauce on the palatableness of the plainest viands? and again, their tastes are simplified by the absence of stimulants of every kind.

The habits of the Mackinaw Salmon are similar to those of most of the non-migratory Lake Trout; they affect and prefer the deep waters at most seasons of the year, and lie at a great depth beneath the surface. In the spring of the year, however, they approach the shores, and are found in the shallow waters, whither, it is supposed, they pursue the various kinds of fish on which they prey, which resort thither in search of larvæ of various insects. They do not enter the rivers to spawn, but approach the shores for that purpose in autumn, depositing their ova on the gravelly shoals, and then retiring again into the depths. In Lake Huron they begin to spawn about the tenth of October, and return to the centre of the lake within three months from the commencement of the movement. The young fry of this fish has been examined by Professor Agassiz, and found to possess the same lateral bands or markings which were formerly believed to be peculiar to the Parr alone, but which are in all probability, common to every species of the family of *Salmonidæ*.

During its stay, at the spawning season, in the shallow channels between the innumerable islands, the Namaycush is speared by torch light in great quantities by the Indians—a cruel and wasteful devastation, which, though it cannot be wondered at in the untutored savage, cannot be reprehended too severely when practised, as it is universally, by the civilized white man, for purposes of reckless sport or illicit and dishonorable gain. In the fur countries they are sometimes taken in the autumn with nets; but the season when it is captured in the greatest abundance is in the months of March and April, during which it is taken by thousands on cod-hooks, baited with small fish set in holes cut through the ice, in eight or nine fathoms water. It will not be amiss here to state that when the ice is formed of snow partially melted and recongealed, so as to be opaque, presenting an appearance like that of ground glass, neither this nor any other of the Trout family will take the bait.

During the mid-summer and mid-winter months the Mackinaw Salmon is rarely seen or captured, as during those seasons it lies in the deepest waters in the centre of the great lakes, so that it can be fished for only with a drop-line and heavy plummet at an extraordinary depth, in a manner similar to that practised in deep-sea fishing.

ABDOMINAL MALACOPTERYGII. SALMONIDÆ

THE SISKAWITZ.

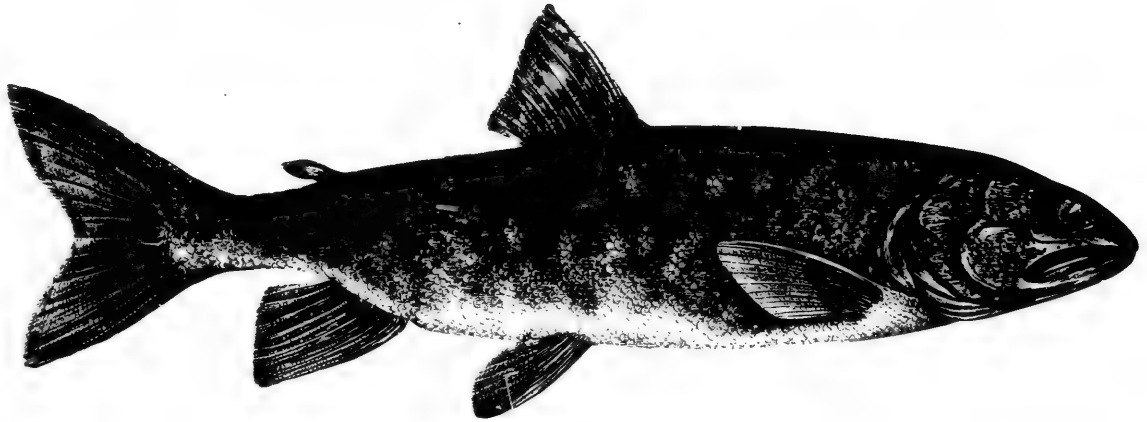
NORTHERN LAKE TROUT.

Salmo Siskawitz · Agassiz.

THIS fine fish, which is second only in size to that last described, was discovered so recently as last summer, during a trip to the upper lakes for scientific purposes by Professor Agassiz, to whose courtesy and kindness I owe the power of including it in this work, as it has not up to this time been described or figured in any book of Natural History. A journal of that tour is at this moment passing through the University press at Harvard, which will comprise a full account of this and several other previously nondescript fishes, together with accurate and beautiful lithographic illustrations by Sonrel; and to this for fuller information, and especially for accounts of several species which do not come within the limits of this work, I refer my readers, certain that they will derive both pleasure and profit from the perusal.

The Siskawitz in its coloring and general appearance, as regarded by an uninstructed eye, bears a very considerable resemblance to the Mackinaw Salmon, or Namaycush, particularly to that accidental variety of it which I have described above as the *Truite de Grève;* and is found in the same waters with it, most abundantly in Lake Superior, a few in Lake Huron near the Sault St. Marie, but none in St. Clair, Erie, or Ontario. And, it is believed, in the smaller inland waters of New York and the Eastern States, it is unknown.

The head, back and sides of the Siskawitz, above the lateral line, are of dingy brownish olive, with a greener gloss on the upper parts, irregularly blotched and clouded, rather than spotted, with lighter circular or oval patches of the same color. Below the lateral line the color is paler and more yellow, with clusters of the same spots



NORTHERN LAKE TROUT; OR SISKAWITZ.

SALMO SISKAWITZ. *Agassis.*

ON WOOD, FROM SONREL'S LITH.: H.W. HERBERT.

fading into a dull dead white, which is the prevailing hue of the belly, with a very slight silvery gloss on some of the scales.

The dorsal and caudal fins are of the same greenish brown with the back, and like it are irregularly patched with lighter spots. The pectoral, ventral and anal fins are paler, but with the same markings, and with a very faint indication of dusky red on the margins.

Altogether, the Siskawitz is a greener colored and less lustrous fish than the Namaycush, and far less distinctly spotted; still there is so much similarity, that by a person not accustomed to look for nicer and more permanent structural distinctions, the two species might be very readily confounded.

In form, the Siskawitz is rather shorter and stouter than the Mackinaw fish, and does not taper nearly so much at either extremity. The head particularly, which in the other is very small, neatly shaped, and depressed toward the snout, is short, thick, and very obtusely rounded, giving a coarse and clumsy profile, and distinguishing it decidedly from the kindred species. On the shoulders it is moderately broad, with the sides somewhat compressed. The length of the head is about one-fourth of the whole length of the fish, from the snout to the tips of the caudal. The skull is strong and bony, with powerful lower jaws. The porous lines and foramina of the bones, seen on the heads of several of the other Trouts, are very evident and distinctly marked in this, as are the radiating processes on the operculum and preoperculum.

The preoperculum is considerably rounded and almost vertical; the posterior free margin of the gill-covers is nearly semicircular, much less acute posteriorly than in the Namaycush.

It has a very complete and formidable dental system, all the maxillary and palatine bones, as well as the lower jaws and either side of the tongue, being armed with strong, sharp, curved teeth, and the vomer provided with a double line extending along the whole length backward. The dorsal fin is situated nearly midway the whole length of the body; the posterior dorsal is thicker and more clumsily shaped than in the preceding species. The caudal fin is deeply forked.

The number of rays in the several fins I am, I regret to say, unable to supply at present.

Neither in coloring nor in form, therefore, does the Siskawitz equal

the Mackinaw Salmon or Namaycush; it is in all respects a clumsier and coarser fish. Its flesh is of the same nature, though much richer; and when salted, it commands nearly double the price of the Namaycush.

Its habits and haunts are almost identical with those of the other species, like which it is not migratory or anadromous, never entering the rivers either for the purpose of spawning or in pursuit of food; although it approaches the shores, and visits the gravelly shallows of the lakes in autumn, in order to deposit its ova.

It is taken by the French inhabitants and by the Indian hunters, with the torch and spear, occasionally with the seau, and also with the long line in deep water. It is said to strike readily at a piece of glittering tin, or mother-of-pearl, made to revolve and glance quickly through the water.*

There is no doubt but that with good spinning tackle, baited with minnow, shiners, or the parr of the Brook Trout, which would probably prove the most killing of the three, or with the deadly spoon, the Siskawitz might be angled for with great success, and would afford good sport, as it is a strong and powerful fish, growing to twenty-five pounds or upwards, although its usual weight does not exceed fifteen or sixteen pounds.

Neither this fish, however, nor the Namaycush, nor, so far as I know, any other of the non-migratory Lake Trout, strikes with the same fierceness and avidity, springing out of the water to take the bait, and leaping far and frequently above the surface when hooked, as the Sea Salmon, the Salmon Trout, or any of the anadromous species of this highly interesting family. The motion of the great lakers is for the most part confined to a heavy lumbering rush in pursuit of the bait, and to a strong dead pull when endeavoring to escape after being struck. They will bore down desperately at first into the deep water, but do not fight with the swift energy or resort to the cunning arti-

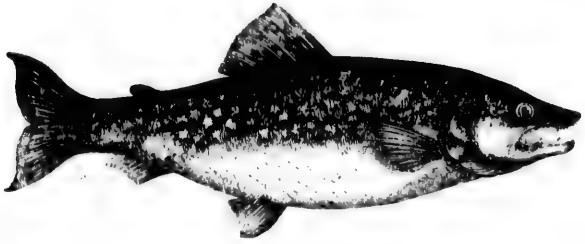
Note to Revised Edition.—From personal observation, since writing the above, I am satisfied that these large Lake Trout cannot be angled for with success, except in very deep water, either with a drop-line, or by trolling from a boat with a plummet, and a cod-hook baited with any kind of flesh, fish, or fowl. The former is the preferable mode. The Indians kill them with the spear, or with baits through the ice, in immense numbers. Fresh, their flesh is coarse, oily, rank and vapid, but when pickled or smoked, they are very palatable.

tices, of the *Salmo Salar*. Strong tackle, an eighteen-foot rod, and a steady hand, will not fail to secure them, even with far less skill than is required to take a three-pounder Brook Trout in a quick-running river.

I may add here, in continuation of the remarks made above, under the head of True Salmon, in reference to the young fry of all this family, that Professor Agassiz has discovered the Pinks, both of this and the preceding species in what may be called the Parr form, with dusky lateral transverse bandings. I have not judged it necessary to give cuts of these fry, as the fact may be regarded as thoroughly established, and as the other characteristics of these young Lake Trout are so broad and distinct, that they could not be easily mistaken either for the young of any other species or for a distinct variety.

The above descriptions, as well as the representation in the annexed wood-cut, are taken, by permission, which is here gratefully acknowledged, from a spirited colored sketch by Mr. Elliot Cabot, of Boston, who accompanied Professor Agassiz on the tour above-mentioned, and from the notes of that gentleman.

It is trusted that this notice, although brief, of an entirely new *Salmo*, will prove satisfactory both to the sportsman and to the naturalist; and if the mention of its peculiarities may induce the gentle anglers of this country to pay a little more attention to the structural differences of fishes, so as to lead to the discovery of new species, several of which, it can hardly be doubted, remain still nondescript in the unfrequented waters of this mighty land, some good will have been done to the great cause of science.



THE LAKE TROUT.

Salmo Confinis; DeKay.

Not having been enabled this spring to obtain a specimen of this fish, which I was exceedingly anxious to do, for the purpose of comparing it with the Siskawitz and Namaycush, I take the following account from the New York Fauna of Dr. DeKay, whose description of the fish is very complete.

It is a very closely cognate species with the two last described, but I believe it to be clearly distinct, which in the first instance I was disposed to doubt.

"*Characteristics.*—Blackish, with numerous gray spots. Body robust; comparatively short in proportion to its depth; caudal fin with a sinuous margin. Length, two to four feet.

"*Description.*—Body stout, thicker and shorter than the common Salmon. Length of the head to the total length, as one to four and and a half nearly. Dorsal outline curved. Scales, small, orbicular, and minutely striated. The lateral line distinctly marked by a series of tubular plates, arising at the upper angle of the opercular opening, slightly concave until it passes over the base of the pectoral fin, when

it proceeds straight to the tail. Head flattened between the eyes. Snout protruded, and in aged individuals with a tubercular enlargement on its extremity. Eyes large; the antero-posterior diameter of the orbits 1.5, and their distance apart 2.5; nostrils contiguous, patent; the anterior vertically oval, the posterior smaller and rounded. Under jaw shortest, and received into a cavity of the upper. The transverse membrane over the roof of the mouth exceedingly tough and thick; the numerous curved teeth in the jaws partly concealed by a loose fleshy membrane. Tongue, long, narrow and thick, with a series of teeth along the central furrow. Many series of acute teeth along the vomer and on the palatines.

"The first dorsal fin with its upper margin rounded, sub-triangular, arising somewhat nearer the snout than the extremity of the caudal rays, higher than long, measuring 4.5 in height, and 4.0 along the base. It is composed of fourteen rays, the first two short, and imbedded in the flesh; the fourth and fifth rays longest. The adipose fin 1.0 long, rounded at the end, scarcely narrowed at the base, an inch long, and placed over the end of the anal fin. Pectoral fins broad and pointed, five inches long, and arising slightly behind a line drawn from the upper posterior angle of the opercle. It is composed of fourteen rays. The ventral fins, placed nearly under the centre of the dorsal fin, composed of nine rays, and furnished with a thick axillary plate. Anal fin quadrate; its extreme height 4.4, and its base 3.0; composed of twelve robust rays. Caudal fin nine inches in extent from tip to tip, furcate, with a sinuous margin.

"*Color* from a living specimen. All the upper portion of the head and body bluish black. Sides of the head, base of the first dorsal, of the caudal and anal fins, with numerous rounded crowded irregular light spots. On the base of the dorsal and caudal, the spots are oblong light greenish; chin brownish bronze; pupils black; irides Salmon color. Tips of the lower fins slightly tinged with red.

"Length 31.3; of the head 7.3. Weight fifteen pounds.

"Fin rays, D. 14.0; P. 14; V. 9; A. 12; C. $21\frac{3}{3}$.

"This is the well-known Lake Salmon, Lake Trout, or Salmon Trout of the State of New York. Among the thirteen species or varieties of Lake Trout, or Lake Salmon, so beautifully illustrated by Richardson, I cannot find this species described. It appears more

nearly allied by the figure to *Salmo Hoodii*, but differs in very important particulars from this species. It occurs in most of the northern lakes of this State, and I have noticed it in Silver Lake, Pennsylvania, adjacent to Broome County, which, as far as I know, is its southernmost limit. The figure illustrating this species was from a specimen taken at Louis Lake, in Hamilton County, of unusual size and vigor. The average weight is eight or ten pounds; but I have heard fishermen speak of some weighing thirty pounds, and even more. There is, however, such a strong propensity to exaggeration in everything in relation to aquatic animals, that I refrain from citing cases derived from such sources.

"They frequent the deepest part of the lake, and unlike most of their congeners, never rise to the fly.

"The flesh is of course much prized in those districts where no oceanic fish is ever tasted; but to me it appears to possess all the coarseness of the Halibut without its flavor."

This, with the exception of a few general remarks on its habits, is all that Dr. DeKay has recorded of this fish.

I cannot, however, proceed, without expressing my great surprise at Dr. DeKay's opinion of its resemblance to the *Salmo Hoodii*, known also as the Arctic Charr, the Mingan river Salmon, and the Masamacoosh of the Cree Indians. This is a decided long-finned Charr, beautifully colored, of a rich lake purple, with numerous bright golden spots, and the red belly of the proper Charr. It is, probably, an anadromous species, running up the swift rivers of the north, and descending to the salt-water to recruit. Its flesh is bright red. In shape, again, it differs entirely from the fish before us, being the longest and most slender of all the *Salmonidæ* of this continent, somewhat resembling the German Hucho in shape.

I can see nothing in which it can be compared to any of the Lake Trout, and least of all to this, which is the most worthless of all the non-migratory species. It is found I believe in Lake Ontario, below the Falls of Niagara, and certainly in all the New England lakes so far to the eastward as the State of Maine. In the British provinces, with the exception of Lakes Mephramagog and Champlain, I do not think that it exists.

From a careful comparison of the cut in Dr. DeKay's work, plate

38, fig. 123, as well as from his description of its coloring, I have no hesitation in pronouncing it far more nearly connected with the Siskawitz of Prof. Agassiz, than with any other of its congeners, although the elongated head, the shape of the fins, and especially the lobe-like formation of the caudal, clearly distinguishes it from this species.

It is to be regretted, however, that in the work of the magnitude and importance of the New York Fauna of the State of New York, the plates should be, as they are, so atrociously executed, that for matters of scientific examination they are all but useless, while as pictorial illustrations, they are below contempt.

NOTE TO REVISED EDITION.—See Supplement. Art. Lake Trout, *Salmo Confinis*. The quality of this fish differs entirely with the different waters from which it is taken. In the New England waters, it is generally bad. In Seneca Lake, and the Hamilton County waters, unequivocally admirable, and exceeded neither by Sea Salmon nor Brook Trout.

SALMON TROUT.

SEA TROUT—WHITE TROUT.

Salmo Trutta; Yarrel.

This beautiful fish, which is the Salmon Trout of the Thames, the Sea Trout of Scotland, and the White Trout of Wales, Devonshire, and Ireland, is found nowhere on the continent of America except on the eastern side of the Province of New Brunswick and in the Gulf of St. Lawrence.

It must on no account be confounded, as it has been by Dr. Smith in his "Fishes of Massachusetts," with the Brook Trout, *Salmo Fontinalis*, when they run down and remain permanently in salt-water, as they do, more or less, along the whole south side of Long Island, but especially at Fireplace, at Waquoit bay, on Cape Cod, and probably at many other points along the eastern coast; for the fish are totally distinct, as will be shown hereafter.

"It is distinguished," says Yarrel, "by the gill-cover being intermediate in its form between that of the Salmon and the Bull Trout. The posterior free margin is less rounded than that of the Salmon, but more so than that of the Bull Trout. The line of union of the

operculum with the suboperculum, and the inferior margin of the suboperculum are oblique, forming a considerable angle with the axis of the body of the fish. The posterior edge of the preoperculum rounded, not sinuous, as in the Bull Trout. The teeth are more slender as well as more numerous than in the Salmon or Bull Trout; those on the vomer extending along a great part of the length, and indenting the tongue deeply between the two rows of teeth that are there placed, one row along each side. The tail is less forked at the same age than that of the Salmon, but becomes like it, square at the end, after the third year. The size and surface of the tail also is much smaller than that of the Salmon, from the shortness of the caudal rays.

"The habits of this species are also very like those of the Salmon, and the females are said to run up the rivers before the males. Sir William Jardine says: 'In approaching the entrance of rivers, or in seeking out, as it were, some one they preferred, shoals of this fish may be seen coasting the shoals and headlands, leaping and sporting in great numbers, from about one pound to three or four pounds in weight; and in some of the smaller bays the shoal could be traced several times circling it, and apparently feeding. They enter every river and rivulet in immense numbers, and when fishing for Salmon, are annoying for their quantity. The food of those taken with the rod in the estuaries appeared very indiscriminate; occasionally the remains of some small fish, which were too much digested to be discriminated; sometimes flies, beetles, or other insects, which the wind or tide had carried out; but the most general food seemed to be the *Talitris Locusta*, or common sand-hopper, with which some of their stomachs were completely crammed.'

"The largest adult fish of this species I have ever seen," Mr. Yarrel adds, "was in the possession of Mr. Groves, the fishmonger in Bond-street. This specimen, which occurred in June, 1831, was a female, in very fine condition, and weighed seventeen pounds."

Never having myself seen this fish in America, although perfectly familiar with it in Great Britain, but having good reason for being sure that it existed in the great estuary of St. Lawrence, and in the bays of Gaspe and Chaleurs, I wrote, so soon as I decided on the preparation of this work, to a friend, Mr. Perley, in New Brunswick, Her Majesty's emigration officer at St. John, knowing that I might

rely as well on his kindness in supplying me with any information he might possess on the subject, as on his skill and thoroughness as a sportsman and fly-fisher, and his science as an icthyologist.

He obligingly replied to me at length, beside sending me a highly valuable report on the Fisheries of the Gulf of St. Lawrence, fully confirming my opinion of the existence of this noble and sporting fish in the Province.

Without farther comment I proceed to lay his observations before my readers, premising only, that while they fully prove the identity of the New Brunswick White Trout with the Salmon Trout of Yarrel, *Salmo Trutta*, and distinguish it from the Brook Trout, whether English or American, *Salmo Fario*, or *Salmo Fontinalis*, they show some remarkable differences in habit from the same fish in the British Islands.

"You will perceive," says Mr. Perley, "that, under official orders, I have been compelled to go into natural history; and that you may see the whole, I send some reports printed in 1847, including one on the Forest Trees of New Brunswick. I procured the second edition of Yarrel, when in London last year, and the beautiful supplement containing the plates of the Salmon, from the little Parr up to the grilse of two years, all of which I have been compelled to study.

"The White Trout of the gulf of St. Lawrence, is precisely similar to the *Salmo Trutta* of Yarrel. The drawing of Vol. II., p. 77, second edition, is a very good representation of our White Trout. In June, when in the finest condition, they are somewhat deeper than there represented"—the cut at the head of this paper is a fac similie of the plate in Yarrel alluded to by Mr. Perley—"the shoulder is then exceedingly thick; the head, especially in the female, is very small. I never heard of any weighing more than seven pounds. I have never seen a White Trout on this side of the province, or anywhere except within the gulf. They are of delicious flavor when newly caught, the white curds lying thick between the bright pink flakes; and they do not cloy like the Salmon.

"Many of the common Trout, *Salmo Fario*"—*Fontinalis*?—"also visit the mixed water of the estuaries, and very likely go out to sea. They then acquire a peculiar silvery brilliancy, and their condition becomes greatly improved; but they cannot be mistaken, even then, for the White Trout. They are a longer fish—their heads are

larger—the color of the spots is more brilliant, and there are more of them; and the tri-colored fins leave no room for doubt, as the fins of the White Trout are very pale, and of a bluish white. When first lifted from the sea, the backs of the White Trout are of a bluish green, just the color of the wave; and the under part of the fish sparkles like molten silver."

In a report of the fly-fishing of the Province, which Mr. Perley was good enough to enclose, I find also the following pertinent remarks on this fish:

"It is to be understood," he says, "that the whole Gulf of St. Lawrence abounds with White Trout, from one to seven pounds in weight. They proceed up the rivers as far as the head of the tide in each, but they never ascend into the purely fresh water. In the salt-water they are caught only with the 'Prince Edward's Island fly,' so called, the body of which is of scarlet with gold tinsel, or of gold tinsel only, with four wings from feathers of the scarlet ibis—the curry-curry' of South America.

"In the estuaries of rivers where the water is only brackish they take the Irish lake-fly with gay colors; the scarlet ibis seems the most attractive, however, in all cases. In the fresh-water the Trout are quite different; they are much longer, very brilliantly colored, with tri-colored fins of black, white and scarlet, and numerous bright spots over the body. When the fish are in good condition these spots are nearly as large as a silver penny. They rarely exceed three pounds in weight, but are a very sporting fish; they take most of the Irish flies, but the red hackle in all its varieties is the favorite. A brilliant hackle, over a yellow or fiery brown body, kills everywhere, all the season through.

"The Sea-Trout fishing, in the bays and harbors of 'Prince Edward's Island,' especially in June, when the fish first rush in from the gulf, is really magnificent; they average from three to five pounds each. I found the best fishing at St. Peter's bay, on the north side of the island, about twenty-eight miles from Charlotte's town. I there killed in one morning sixteen Trout, which weighed eighty pounds.

"In the bays, and along the coasts of the island, they are taken with the scarlet fly, from a boat under easy sail, with a 'mackerel breeze,' and oftentimes a heavy 'ground swell.' The fly skips from wave to

wave at the end of thirty yards of line, and there should be at least seventy yards more on the reel. It is splendid sport! as a strong fish will make sometimes a long run, and give a good chase down the wind."

This clear, able and sportsmanlike account of this fine fish perfectly establishes the fact of its existence as a distinct species, intermediate between the true Salmon, *Salmo Salar*, on the one hand, and the Brook Trout, *Salmo Fontinalis*, on the other. And it must on no account be confounded with the non-migratory Lake Trouts, which have been just described, and which are sometimes erroneously and absurdly called Salmon Trout. They never quit the purely fresh-water—these never leave it. These are anadromous, those stationary.

Those are a worthless fish, both to the sportsman and the epicure, comparatively speaking; these are in all respects the most valuable of the species, with the exception only of the true Salmon; and neither in excellence of flavor nor in sporting qualifications do they fall behind even him, although they are far inferior in weight and size.

Mr. Yarrel states that the length of the head in this fish is as one to four to the length of the whole body, and the depth of the body to the length the same. The teeth, small and numerous, occupying five rows on the upper surface of the mouth, those of the central row, on the vomer, extending some distance along it, the points turning alternately to each side, one row on each side of the under jaw, and three or four teeth on each side of the tongue, strong, sharp, and curving backwards, well calculated to secure a living prey, or convey food towards the pharynx.

The dorsal fin-rays are twelve in number, the pectoral thirteen, the ventral nine, the anal ten, and the caudal nineteen. When the Salmon Trout is placed by the side of a Salmon, it is in comparison darker in color in the body, but lighter in the color of the fins.

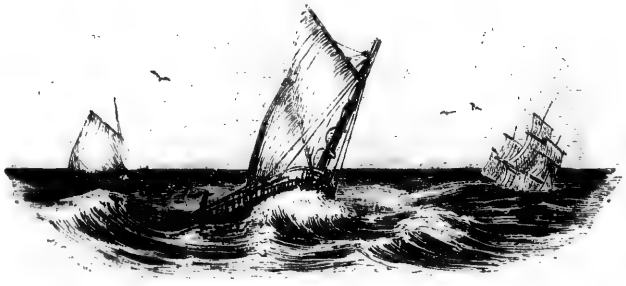
It is with great satisfaction that I am enabled to present this beautiful and gallant fish to my readers, and to establish with certainty its identity with the *Salmo Trutta* of Yarrel, and its existence in the North American Provinces. This fish has hitherto never been described in any American sporting work, nor I believe in any work of a scientific character, as an American species, with the exception of the Parliamentary reports of Mr. Perley. The fish described as the

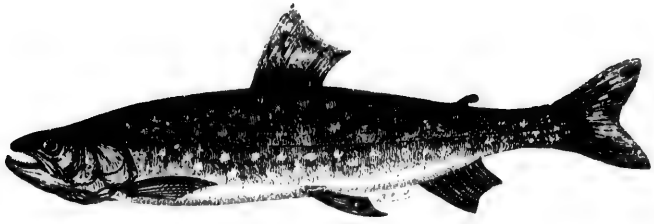
Salmo Trutta in the American Angler's Guide, and in Smith s Fishes of Massachusetts, is, as I have already observed, nothing resembling it, but the very Brook Trout described above, with the tri-colored fin, improved by a visit to salt-water.

I may here observe, *en-passant*, that my distinguished friend, Mr. Agassiz, was not aware, a few months since, of the existence of this fish as an American species.

It cannot fail to prove a great acquisition to the list of the American angler, as there is no bolder or better fish, and its haunts are of no difficult access. I learn that an English yacht is already fitting out, in order to take the field against the Sea Trout in the gulf this very summer; and I doubt not that ere long some of our New York clippers will spread their wings in emulation of their brothers of the angle from the eastern side of the broad Atlantic. I can conceive no more delightful trip, no more exciting rivalry.

Note to Revised Edition.—Mr. Perley writes me, under date of October 19, that during a recent visit to the bay of Gaspe, he has ascertained that the Salmon Trout pursue the Smelts into the rivers and harbors, and return to the sea as soon as the Smelt ascend the brooks. It appears that they do not spawn or breed in America.





THE MASAMACUSH.

HOOD'S CHARR.

Salmo Hoodii; Richardson.

THIS beautiful fish is given on the authority of Dr. Richardson, by whom it appears to have been first described, although discovered by Lieutenant Hood, in Pine Island lake, latitude 54°.

It is not a little remarkable that this fish should have so long remained unknown, as it is stated by its describer "to be common in every lake and river from Canada to the northern extremity of the continent." Whether this includes the great lakes above the Falls of Niagara, it is not stated, although the language would authorise that interpretation; no distinct mention is made of it, however, as having been taken south of the Mingan river, which empties into the estuary of St. Lawrence somewhere about the latitude of 50°; all the other specimens described being taken in Winter lake, or in the waters of Boothia Felix; it is scarcely possible, however, but that it must be found to the southward of this line, to justify the words of so accurate and correct a writer as Dr. Richardson.

At all events, the Mingan river is in Canada proper, in the lord-

ship of Mingan, and is constantly visited, for the purpose of Salmon fishing, by yachting parties from Quebec, scarcely a year occurring but one or more vessels are fitted out for this wild spot, which is nearly opposite to the northern side of the inhospitable, and nearly if not absolutely uninhabited island of Anticosti, the sport amply repaying the time and trouble.

I am personally acquainted with several very accomplished Salmon fishers who are at home on those waters, yet by none of these have I ever heard any mention of this fish, and I am well satisfied that although it must, I presume, have been taken by them frequently, it has entirely escaped their observation, being probably confounded either with the Salmon, or the Salmon Trout, although entirely distinct from either. It is remarkable as being the only Charr that is found in the inhabited portions of the United States or Canada, for although Richardson designates the common Brook Trout, *Salmo Fontinalis*, as the *New-York Charr*, I confess I am at a loss to perceive any grounds for so specifying it. One of the marked characteristics of the Charr, the greater comparative height of the dorsal fin, which will be readily observed in the cut at the head of this paper, is entirely wanting in the Brook Trout, and although the vomerine teeth are disposed in a cluster in that species, after the manner of the Charrs, this alone hardly appears to me a sufficient reason for altering its nomenclature.

The other varieties of Charr, the Angmalook, *Salmo Nitidus*, and the long-finned Charr, *Salmo Alipes*, are found in the small lakes and rivers of Boothia Felix, but as that far northern peninsula is utterly beyond the reach of the most determined angler, it is useless to give them more than this mere passing notice.

The Masamacush is, on the contrary, within easy reach of all who are willing to travel distances, without incurring either risk or fatigue, in pursuit of their game, and is found, moreover, in the very waters which afford the greatest variety and the highest attractions to the scientific fly-fisher, in their abundance of Salmon, Salmon Trout, and Brook Trout. It is also a bold and daring biter, voraciously seizing a bait of sucking carp, pork, deer's heart, or the belly of one of its own species affixed upon a cod-hook. "We took many at Fort Enterprise, in March, in gill-nets set under the ice," says Dr. Richard-

son, "in the neighborhood of an open rapid by which the waters of Winter lake were discharged into a river that remained frozen up until June. At that time their stomachs were filled with the larvæ of insects. During the summer this fish is supposed to retire to the depths of the lakes, but it reappears in smaller numbers in the autumn, and is occasionally taken in the winter in nets, but seldom by the hook, except in the spring. The spawning season is in April or May, judging from the great development the spawn then acquires, though the spawning beds are unknown to us. The Masamacush attains a weight of eight pounds, but begins to spawn before it weighs more than two or three."

Dr. Richardson does not state whether this fish will take the fly or not, but as it is not the general habit of the non-migratory Trout of the American lakes, or of the British Charr, to do so, it may, I think, be presumed that the Masamacush, where he exists in lakes, is to be taken by trolling in deep water with a small Trout or other fish upon a heavily-weighted hook, with spinning tackle.

It is not distinctly stated, and probably is not ascertained, whether this is an anadromous or non-migratory fish. The Charrs, for the most part, are found only in the deepest parts of the lakes which they inhabit, and rarely enter the streams which feed or drain these but for the purpose of spawning, when they seek out the clearest and swiftest rivers running on gravel bottoms.

The fact, however, that the Masamacush is taken in the Mingan river, a powerful body of water having direct communication with the sea, would go far to prove that he is an anadromous fish there, at least, visiting the sea, and returning to spawn; although it is very probable that like many of this family, and like his own congener, the Angmalook, he can exist indifferently in fresh or salt-water.

Like all the Charrs, he is red-fleshed, and of delicious flavor. And from these facts, were it not that the Masamacush is said not to exceed eight pounds in weight, I should be vastly inclined to suspect his identity with the red-fleshed and bright-colored lake-fish, which is occasionally taken in the Hamilton County waters, as mentioned by

NOTE TO SECOND EDITION.—I believe at present, from my observation in the Northern Lakes, that it is of no use to attempt to take any of the Great Lake Trout on Claire with the fly; and that they will rarely hook even at a trolled bait. Heavy lead and a long drop-line in sixty to one hundred feet water will alone fetch them

Dr. Bethune in his beautiful edition of Walton's Angler, at page 138, in a note; and as described to me by Mr. Webber, the author of a series of very agreeable letters concerning the fishing of that region, which were published in the columns of the New York Courier and Inquirer during the past summer.

It is very unfortunate that, so far, none of the gentlemen who have been so lucky as to take this highly-colored and fine fish, have possessed sufficient scientific knowledge to examine and record its characteristics in such a manner as to allow us to decide upon its identity with any known species.

The only thing which appears to be certain, is this: that it does not belong to any one of the three known species of the non-migratory Lake Trout. As it is said to have been taken by the President of the Piseco Club, a gentleman on whose authority perfect reliance may be placed, up to the great weight of twenty-four pounds, this must, in my opinion, be either an entirely nondescript fish, or merely a Brook Trout of gigantic dimensions.

It is generally described as being square-tailed, with two rows of red spots, the ventrals and pectorals deeply tinged with vermillion, and the flesh of a bright glowing carnation, and a delicious flavor. Now, this description coincides with no described fish of North America, though nearly agreeing with that of the great common English Trout of the Thames, and of the Irish lakes and rivers.

But to return to the Masamacush, as it is known to exist in the northern waters.

Its body, as will be observed in the cut, is more slender than that of any of the *Salmonidæ* heretofore described, and the head is about a sixth of the total length. The lower jaw, when the mouth is closed, projects beyond the upper one by the depth of the chin, and it appears longer yet when the mouth is open.

The teeth of the labials, intermaxillaries and lower jaw, are very small, short, conical, acute, and slightly curved—on the palatine bones there is a row of larger teeth mixed with smaller ones, and on the knob of the vomer, a cluster of six or seven. The tongue is armed with a single row on each side, which meet in a curve at the tip; there are also two or three scattered teeth on the centre of the tongue. The rakers and pharyngeal bones are armed with short teeth

like velvet pile. Of the gill-covers, the operculum is very narrow, its transverse diameter being scarcely half its height. The subopercular exceeds the half of its length in height.

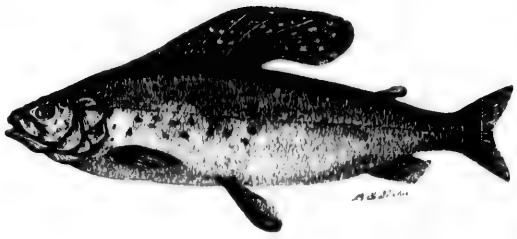
The Masamacush of the Mingan river, which is the fish in its normal form, according to Dr. Richardson, from whom this account is abridged, has ten gill-rays on one side, eleven on the other; dorsal fin-rays twelve, pectoral thirteen, ventral eight, anal ten, and caudal nineteen.

The back and sides of this fish are intermediate between olive green and clove brown, bestudded with yellowish gray spots as big as a pea. A few of these spots on the gill-covers. Belly and under jaw white; the latter dotted thinly with bluish gray.

The Arctic fish is brighter in color; the back and sides being purple, the spots distinctly yellow, and the sides, below the lateral line, tinged with a flush of lake.

Before proceeding to the Grayling, which, though of this family, is not a proper Salmon, but of the subgenus *Thymallus*, I will observe that the opinion which I hazarded in my introductory remarks concerning the existence of a distinct Salmon in Sebago lake, near Portland, in Maine, known as the Sebago Trout, and which I proposed to designate as Salmo Sebago, is fully carried out by the information which I have received since writing those remarks, from a thorough sportsman, well acquainted with all the described species.

He assures me that the waters of that lake did contain a Salmon closely resembling the *Salmo Salar*, but which has in all probability become extinct. At the date of his writing, he was about to set forth on a visit to the lake, and should a fish be procurable, I shall receive it, although not in time to include it in the body of the work, at least in season to be embodied in the appendix.



BACK'S GRAYLING.

THE ARCTIC GRAYLING.

Thymallus Signifer; Richardson, Cuvier.—*Hewlook-powak*; Esquimaux.—*Poisson Bleu*; Can. Voy.

THE exceeding beauty, and remarkably game qualities of this noble fish, have induced me to give him a place in these pages, to which his place of nativity hardly entitles him, as he is, I fear, to be found no where southward of the 62nd parallel of latitude, between Mackenzie's river and the Welcome. "Its highly appropriate Esquimaux title," says Dr. Richardson, from whose fine work on the Fauna of Arctic America I have borrowed both the matter of this paper and the cut at the head of this page, "denoting 'wing-like fin,' alludes to its magnificent dorsal; and it was in reference to the same feature that I bestowed upon it the specific appellation of *Signifer*, 'the standard-bearer,' intending also to advert to the rank of my companion, Captain Back, then a midshipman, who took the first specimen we saw with the artificial fly."

I may remark here, that the European Grayling has the similar appellation of *Vexillifer*, or the "banner-bearer," in allusion to the same feature, although the fin is greatly inferior in size to that of the fish

of which I am speaking. The allusion to Captain Back, then a midshipman, is founded on the fact, that midshipmen in the British navy, rank as ensigns in the army, and that French officers of the same grade, are styled *enseigne de vaisseau*, in consequence of the same analogy.

Dr. Richardson proceeds to observe that "it is found only in clear waters, and seems to delight in the most rapid part of mountain streams. In the autumn of 1820, we obtained many by angling in a rapid of the Winter river, opposite to Fort Enterprise. The sport was excellent, for this Grayling generally springs entirely out of water when first struck by the hook, and tugs strongly at the line, requiring as much dexterity to land it safely as it would to secure a Trout of six times the size.

And this latter would be no small feat, since I find elsewhere that the fish grows to five or six pounds weight, greatly exceeding his European congener in size, as he does also in vigor and brilliancy of coloring.

"The characters by which the Graylings are distinguished from the Trouts," continues Dr. Richardson, "in the *règne animal*, are the smallness of the mouth, the fineness of the teeth, the great size of the dorsal fin, and the largeness of the scales. The stomach is a very thick sac; the gill-rays are seven or eight in number."

The color of this beautiful fish, is stated by the same author to be as follows: "Back dark; sides of a hue intermediate between lavender purple and bluish gray; belly blackish gray with several irregular whitish blotches. There are several quadrangular spots of Prussian blue, on the anterior part of the body, each tinging the margin of four adjoining scales. The head is hair brown above, the cheeks and gill-covers the same, combined with purplish tints, and there is a blue mark on each side of the lower jaw. The dorsal fin has a blackish gray color, with some lighter blotches, and is crossed by rows of beautiful Berlin-blue spots; it is edged with light lake-red. The *ventrals* are streaked with reddish and whitish lines in the direction of their rays.

"The scales are covered with a thickish epidermis, consequently having little lustre.

"The body is compressed with an elliptical profile, the head, when

the mouth is shut, ending acutely, but when viewed from above, or in front, the snout is obtuse. The greatest depth of the body is scarcely one-fifth of the total length, caudal included. The head is small, being one-sixth of the total length, excluding the caudal, or one-seventh including it. Orbit large, distant half its diameter from the snout, and two diameters from the edge of the gill-cover. Nostrils midway between the orbit and the tip of the snout. Mouth not cloven as far back as the edge of the orbit. Intermaxillaries longer than in the *Coregoni*, but overlapping the articular end of the labials less than in the *Trutta*. Labials, thin elliptical plates, the posterior piece lanceolate, and as broad as the anterior one. Under jaw tolerably strong and rounded at the tip.

"The teeth are small, subulate, pointed, and slightly curved, standing in a single series on the intermaxillaries, in two rows on the palatines, and in clusters of six or seven on the vomer. The tongue is smooth, but the pharyngeal bones, and cartilaginous rakers of the branchial arches are rough.

"Of the gill-covers, the preoperculum has the form of a wide moderately curved crescent. The suboperculum is more than half the height of the operculum, not exceeding it in length. Interoperculum, small, and acute-angled.

"The dorsal fin has twenty-three rays, the pectorals fifteen, the ventrals nine, the anal thirteen, and the caudal nineteen.

"Although this exquisitely beautiful and very game fish, is not, as I have previously observed, properly speaking, a native either of the United States or the British provinces, being found only in the northern part of the unsettled regions of British America, and the waters flowing from Great Slave lake into the Arctic ocean, still, so wonderfully are the facilities of travel increasing through the West and North, and so great is the enthusiasm of the Anglo-Norman race in all matters connected with sporting and sportsmanship, that it by no means appears to me impossible that, before many years have elapsed, the lovers of the angle, whether of English or American birth, will be found casting the fly in the glass-clear rapids of the Winter river, and the other waters of those untamed regions, for the Arctic Grayling, and the many beautiful species of Salmon that are to be taken

there. Nor would there, I believe, be much more risk or hardship attending the performance of such a sporting tour, by a strong and well-found party, than was incurred, not only without hesitation, but with alacrity and enthusiasm, by the sporting gentlemen who crossed the Mississippi, in pursuit of the elk and buffalo, at any time antecedent to the Black Hawk war.

The excitement, the novelty, and, consequently, the charm of such an expedition, would be indescribable; and as the brief summer of those regions is as beautiful as it is brief, while the sportsman would be brought into contact with an entirely new race of beasts, birds, and fish of chase, I can imagine nothing that would better repay the risk and enterprise of such an expedition.

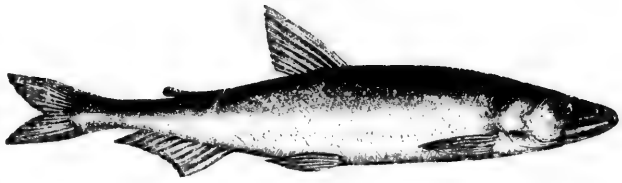
All the arrangements of such a tour could be made with greatest ease at Montreal, where every facility could be afforded to the tourists by the agents of the fur companies, and where the whole of the necessary means are just as well understood, and the necessary outfit just as easily procured, as are those for a fishing excursion into Hamilton County, in New York, or for a Maine Moose-hunt, in Boston.

The prairies of the West have long been explored as hunting grounds, by the sportsmen of the old as well as by the hunters and the trappers of the new world—the forests and deserts of Africa have afforded their trophies of the savage trace, the central wilds of Abyssinia have surrendered their fierce denizens, the forests of Ceylon, and the dark jungles of the farthest India, have become familiar hunting grounds to the English sportsmen; and I think it is scarcely to be doubted that, before many years have elapsed, the Swedish and Norwegian rivers being already overfished, the votaries of the rod and reel from either side of the Atlantic, will be found whipping the yet virgin streams of the far Northwest.

Political reasons, too, will have their weight in bringing about such a consummation; for the disturbed state of the continent is already sufficiently alarming to deter the pleasure-seeking yatcher from visiting his old haunts in the soft and sunny seas of southern Europe, while the stormier seas of the Western world offer him peace at least and hospitality, while on these shores he will find sport, whether he affect the rifle or the rod, far superior to what he has been used to enjoy on the

Eastern continent. I have heard of one yatch already fitting out by an enthusiastic English sportsman, with the intent of visiting this very season the Gulf of St. Lawrence, the bays of Gaspe and Chaleurs, and the wild shores of Prince Edward's Island; and that good sport to his utmost wish may follow the adventurous owner, must be the prayer of every generous son of the gun or angle.

NOTE TO REVISED EDITION.—Since penning the above, Mr. Perley, of St. John's, to whom I applied for information touching this fish, writes me that a brother sportsman informs him that he has killed them abundantly in the Hudson Bay waters. I think it probable that they may be found in Labrador.



THE AMERICAN SMELT.

Osmerus Viridescens ; LeSueur, DeKay, Agassiz.

This highly-prized and delicious little fish does not properly fall within the angler's catalogue of sporting fishes, inasmuch as it is questionable, at least, whether it is ever taken with the hook ; I have heard it positively asserted that it has been captured, both with the fly and with its own roe, but I consider the fact doubtful, to say no more —the fish having probably been confounded with the Atherine or Sand-smelt, a small fish commonly known in this country as the Sparling, and much used as a bait fish. This fish, which a good deal resembles the true Smelt, both in appearance and flavor, is of a different order and family, being of the order *Acanthopterygii*, and family *Mugilidæ*, bites freely and readily, and has probably, as I observed, been mistaken by the unscientific angler.

My object in dwelling on this delicate little fish, is, firstly, to correct a vulgar error which I find still prevalent with many persons, that the true Smelt is identical with the Salmon smolt, and is, in fact, the fry of the Salmon at the commencement of his second year

The absurdity of this is sufficiently evident from the consideration that the Salmon smolt is an immature fish, which runs down the rivers he inhabits in the spring, and returns in the autumn a grilse, as has been related above ; whereas the Smelt enters the rivers perfectly mature, and full of spawn, running up for the purpose of depositing its

ova so soon as, or even before, the streams are clear from ice, and returning a spent fish in the autumn. It is a sub-genus of the genus *Salmo*, true—but as distinct from it as a Roebuck from an Elk.

My second object in devoting a page or two to this little fish, is to call the attention of scientific men to the fact that there are, in the United States, two distinct species of this fish: the Common American Smelt, *Osmerus Viridescens*—which differs from the European Smelt, *Osmerus Eperlanus*, in many particulars—and a much smaller and more highly scented, as well as highly flavored, variety, which I believe to be identical of the European fish.

Some years since, before I thought of publishing on this subject, I compared this smaller fish with the Eastern Smelt, *Osmerus Viridescens*, of LeSueur, and, although I have unfortunately lost the notes which I made at that time, and forgot the specific differences, except that the ventral fin in the smaller fish was considerably farther forward than in the common fish, I am certain of the fact that there were farther differences in the number of the fin-rays, apart from the extraordinary difference in size, which could not fail to strike the least observant.

This smaller fish, so far as I know or have heard, is never taken but in the Passaic and Raritan rivers; and in neither of these is the large Smelt, common alike to the Eastern and the Southern States, ever seen. I have observed and examined many thousands, by bushel baskets-full at a time, and have never seen a fish exceeding seven or eight inches in length taken from the Passaic, the general run not exceeding six; whereas it is notorious that the American Smelt is rarely taken less than ten or eleven, and thence upward to twelve and fifteen inches.

Yarrel states of the European Smelt, that they are occasionally seen ten and eleven inches long, but that this is an unusually large size.

He also describes their food, during their residence in fresh-water, as consisting of small fish, with crustaceous and testaceous animals. In the Tay they are said to feed principally upon the shrimp; and I have heard it asserted by persons of integrity, that they have been caught with the same bait near Belleville, on the Passaic.

It was my full intention to have instituted a full examination and

comparison of these—which I am perfectly satisfied will prove to be two distinct species—this last spring; but unfortunately I was necessarily absent from home during the very few days of this season in which they were taken in the Passaic, and lost the opportunity of doing so. The run of them is becoming less and less numerous every successive season, and it is to be apprehended that ere long they will cease to visit us at all.

I will remark here that the habit of the European Smelt in England is very capricious in regard to the rivers which he honors with his presence. It is said that in England the Smelt is never taken between Dover and Land's End; on the eastern side of the island it is taken from the Thames and Medway to the Tay, and on the western, in the Solway, and so far south only as the Mersey and the Dee.

A specific description of this well-known little fish would be useless, as I am unable to furnish data of comparison between the Smelt of the Raritan and Passaic rivers in New Jersey and the *Osmerus Viridescens*.

Before proceeding farther, I will merely observe that I am well assured that it is generally believed these different species of fish cannot be taken with the hook, merely for the reason that no one has ever attempted so to take them; at least, with any bait at which there was the slightest probability of their rising.

I know that the Shad and the Herring, contrary to all received opinion, can be taken with the fly; and I have had great sport myself with the latter fish, off the pier of Fort Diamond in the New York Narrows, catching them with a gaudy peacock-fly, as fast as I could throw it in and pull them out.

It would by no means surprise me to find, that, during the time when Smelt run up our streams, they may be taken freely, either with a very small bright fly, or with morsels of shrimp or pellets of their own roe, upon a number-twelve Limerick Trout-hook, and thrown like a fly, on the surface.* Should such prove to be the case, they would afford very pretty light fishing at a time when there is no other sport for the angler.

* Note to Revised Edition.—On this point, see Supplement. Art. American Smelt

ABDOMINAL
MALACOPTERYGII SALMONIDÆ.

THE CAPELIN.

Mallotus Villotus; Cuvier.

Of this beautiful little fish, which inhabits the northern seas only, never coming farther south than the shores of Nova Scotia and New Brunswick, I am unable to offer any representation to my readers, never having seen a specimen or engraving.

He is very nearly allied to the Smelts, from which he differs principally in the smallness of his teeth.

He is stated in Mr. Perley's report on the Fisheries of the Gulf of St. Lawrence, to be "from four to seven inches in length, the under jaw longer than the upper, the color of the back greenish, the under surface of the body silvery. They usually appear about Miscon and in the bay of Chaleur early in May; but sometimes not until nearly the end of that month. The Cod fishery does not commence until the arrival of the Capelin, which continues near the shores until the end of July."

Mr. Perley proceeds to state that, in consequence of the "wanton destruction of the proper food of the Cod—Herring and Capelin—which are taken in immense quantities, not for immediate eating, or for curing, or for bait, but for manuring the ground," the Cod fishery is utterly declining, the fisheries going to waste, and the establishments deserted and going to ruin.

"In a representation," he adds, "made to the Canadian Legislature by a fisherman of Gaspe, it is stated that this fisherman had seen five hundred barrels of Capelin taken in one tide expressly for manure; and that he has also seen one thousand barrels of Herring caught at one time, and not taken away, but left to rot upon the beach."

It is in this connection that I have here enumerated the Capelin; for he cannot be taken with the hook, so far as I can learn, and therefore is not game. But for Cod fishing, whether with the deep-sea line,

or the bultow, as it is called, or set-line, it is invaluable as a bait. Whenever it can be obtained, no other should be used.

It is an exceedingly excellent fish, however, for the table, possessing much of the flavor with the peculiar cucumber odor of the Smelt.

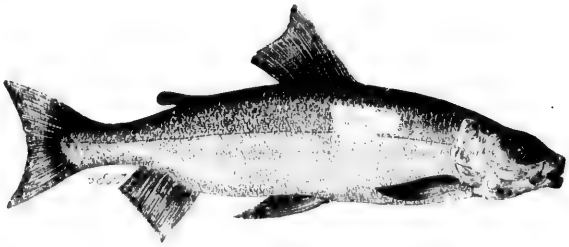
This wanton and stupid destruction of all kinds of game, whether feathered, finned, or furred, really appears to be a distinct characteristic of all the white inhabitants of America, wheresoever they are to be found; and it cannot be doubted that ere long they will most bitterly regret the consequences of their rapacity and wasteful folly.

In this case, the wantonness is the more remarkable, as well as disgraceful, because, as Mr. Perley well remarks, "a bountiful Providence has furnished the shores with inexhaustible quantities of kelp and sea-weed, and other valuable manures, which really enrich the soil while it is admitted that the use of fish greatly deteriorates it.

"The legislature of Canada has been strongly urged to make it a misdemeanor, punishable by fine and imprisonment, for any person to to use either Herring or Capelin as manure, and such a measure would seem to be highly desirable in New Brunswick. To be effective, there should be similar regulations on both sides of the bay of Chaleur."

Doubtless this is all very true, but unfortunately the Legislature of Canada is much too busy in passing bills for the reward of notorious murderers and rebels, and the opposition to the ministry much too busy in combating them, and striving to get into office again, to think of anything that could benefit the Province, or tend to the good of any one except themselves and their own immediate partizans.

Their own bad passions, and factious partizanship, and no external causes whatsoever, are the bane and curse of the Canadas; but, after all, I suppose, it matters mighty little whether the legislature pass such a law or no; for no human being that I ever heard of in America, whether British or of the United States, ever dreamed of obeying the game law, except exactly in so far as suited his own convenience. So I presume the doom of the Capelin, and ultimately of the Cod, may be considered sealed.



THE WHITE-FISH.

ATTIHAWMEG.

Coregonus Albus; Le Sueur, Cuvier.

This and the succeeding fish are the last two of the Salmon family, and the only two of their own peculiar sub-genus found within the limits of the United States and British Provinces, although there are several other species in the Arctic regions.

In Europe they have several equivalents which are generally known as Lavarets; of these are the well-known British species, the Gwyniad, the Vendace, and the Powan, of England and Scotland, and the Pollan of Ireland, all closely connected, and yet perfectly distinct from the analogous fish of America.

Here, unfortunately, these fine fish have no names at all, save the trivial designations or absurd misnomers given to them by the first rude settlers of the regions in which they are found.

The fish of which we are now speaking is probably the most delicious of all the purely fresh-water varieties—for such to all intents and purposes it is, as a table fish, for it is not found within the limits of civilization, except in the lakes above the Falls of Niagara, which preclude the possibility of communication with the sea. It is, how-

ever, found in the Coppermine, the Mackenzie, and other rivers which fall into the Arctic sea, and can "probably live indifferently," as Dr. Richardson observes, "on fresh or salt-water, like several species of *Truttæ* and *Coregoni*, that occasionally wander to the sea, although they are not strictly anadromous."

It is claimed by the inhabitants of that portion of the State of New York that the finest White-Fish of the whole western country are taken in Chatauque lake, a small mountain tarn situated some hundred feet above Lake Erie, and forming one of the sources of the Alleghany river. I doubt not the superiority of the Chatauque lake White-Fish to the same species taken in the shallow, muddy, and turbulent waters of Lake Erie; but I entirely disbelieve in its being able to sustain comparison with that of the clear, deep, and cold waters of Lake Huron, where it is found of the greatest size, and in, as I understand, the greatest perfection.

"It is," says Richardson, "a rich, fat fish, yet instead of producing satiety, it becomes daily more agreeable to the palate; and I know from experience, that though deprived of bread and vegetables, one may live wholly upon this fish for months, or even years, without tiring."

"In October," observes the same author, "the Attihawmeg"—this is its appellation among the Cree Indians, and it were most desirable that in the absence of any correct English nomenclature the aboriginal names could be adopted—"quits the lakes, and enters the rivers for the purpose of spawning. It ascends the streams in the night-time, and returns to the lake as soon as it has spawned. Dr. Todd informed me that it enters the Severn river from Lake Huron about the 25th of October, and retires to the depths of the lake again by the 10th of November; but that in some rapid rocky rivers of that lake, individuals are taken throughout the year. A few spawn in the summer It is a gregarious fish, and resorts to different parts of a lake, according to the season of the year, its movements being in all probability regulated by its supply of food. In winter the fisheries are generally established in deep water, remote from the shore; toward the breaking up of the ice, they are moved near to the outlets of the lake; and in the summer comparatively few Attihawmeg are caught, except what are speared in the rivers. After the spawning period, the fall fishery, as it is termed, is more productive in shallow bays and on banks near

the shore. I was informed in the fur countries, that this fish preys on insects, and that it occasionally though rarely takes a hook baited with a small piece of meat. Dr. Todd found fresh-water shells and small fishes in the stomachs of the Lake Huron Attihawmeg; indeed shelly mollusca—*Helix*, *Planorbis*, *Lymneus*, *Paludina*, &c.—appear to be a favorite food of several Trout and *Coregoni*, both in Europe and America."

The fact of the Attihawmeg feeding on shell-fish is greatly corroborated by the circumstance of its differing from all the other known *Coregoni* in the extraordinary thickness of its stomach, which resembles the gizzard of a fowl; the same being the case with the Gillaroo or shell-fish-eating Trout of the Irish lochs; and, I have little doubt, with the crab-eating Trout of the Marshpee river in this country.

To the excellence of the White-Fish, I can bear personal testimony when on the table, but I have never had an opportunity of examining it; and I am indebted for the description below, to the Fauna Boreali-Americana, of the author I have already so often quoted.

I am informed that this fish is occasionally taken by persons engaged in trolling for the Lake Trout, or throwing the fly for the Black Bass, *Gristes Nigricans*, nor can I at all doubt that were his habits properly observed and carefully studied by a scientific angler, judging from what has been stated above in relation to his food, he might be taken with the hook with as much certainty as any other of the lake fish, unless, perhaps, the Black Bass, and he would assuredly show great sport at the end of a long line, being both a powerful and active fish.

The average weight of this fish appears to be three or four pounds, but when very fat, it is often taken up to seven or eight; and in particular localities it attains a much greater size, having been caught in Lake Huron of thirteen or fourteen, and in Lake Manito, it is said, of twenty.

One of seven pounds, caught in Lake Huron, measured twenty-seven inches in length.

In form, the Attihawmeg is very deep in comparison to its length; one of the ordinary size, taken in Pine Island lake, measuring as five to seventeen, exclusive of the caudal fin; but when very fat, its depth is as one to three.

The body is compressed, being much less thick than deep. The

head is narrow above, with a moderately wide frontal bone, and forming one-fifth of the length, excluding the caudal.

The eyes are large, and situated a little more than a diameter of the orbit from the tip of the snout, and nearly thrice as far from the edge of the gill-plate. The nostrils are placed midway between the orbit and the snout. The snout is blunt when seen in front, but its profile is more acute. The mouth has a small orifice, but when shut, its angles are depressed

The jaws and tongue are furnished with a few teeth, which are too minute to be readily seen by the naked eye, and too slender to be very perceptible to the finger. The vomer and palate are quite smooth.

Of the gill-covers, the preoperculum is sharply curved, and rather broad; its width, in the middle, equalling the height of the suboperculum The operculum measures one-third more vertically than it does horizontally; while on the contrary, the suboperculum is twice as long as it is high. The interoperculum is triangular. The *branchial arches* have each a single row of erect subulate rakers, a quarter of an inch long, and rough on their inner surfaces. The pharyngeal bones are inconspicuous and toothless.

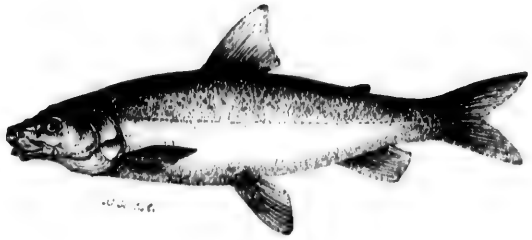
The scales are large, irregularly orbicular, and about half an inch in diameter, with a bright pearly lustre.

Color, in the shade, bluish gray on the back, lighter on the sides, and white on the belly, giving place to a nacry and iridescent pearly lustre in a full light. Cheeks, opercula, and irides, thickly covered with nacre.

Fins: branchiostegous rays eight, dorsal fifteen, pectoral sixteen, ventral eleven, anal fifteen, caudal nineteen and seven-sevenths. The adipose fin is rather large, and situated opposite the termination of the anal. The caudal is forked, and spreads widely.

*It is, in short, a very beautiful fish, and no less useful than it is beautiful and delicious, affording the principal subsistence to several Indian hordes, and being the main reliance of many of the fur posts for eight or nine months of the year, the supply of other articles of diet being scanty and casual.

* Note to Revised Edition.—For many further particulars concerning this noble fish, See Supplement. Art. Attihawmeg.



THE OTSEGO BASS.

OTSEGO LAVARET.

Coregonus Otsego; DeKay.—*Salmo Otsego*; Dewitt Clinton.

THROUGH the kindness of my esteemed friend, Mr. Cooper, of Cooperstown, I have had an opportunity, during this present spring, of carefully examining and dissecting this exceedingly beautiful and interesting fish, as well as of testing its qualities on the table.

It is very closely cognate to the last-mentioned species, but is unquestionably distinct; differing in size, form, in the number of fin-rays, slightly in the gill-covers, and so far as I could discover without a microscope, entirely in the dental system.

Although a deep fish, it is not nearly so much so as the Attihawmeg; the finest specimen which I inspected measuring eighteen and a half inches in length, and ten inches in circumference at the origin of the dorsal fin; the depth at the same point was a fraction under four inches, not being much less than a fifth of the whole length, including the caudal. The gill-covers differed in form, in having the posterior free margin more curved, and less vertical, the operculum less high in proportion to its length, and the suboperculum more so

The snout was sharper and longer, and the labial plates shallower in proportion to their length.

The branchiostegous rays were eight on one side, nine on the other; the dorsal fin-rays thirteen, the pectoral seventeen, the ventral eleven, the anal eleven, and the caudal twenty-two

I examined the mouth as minutely as I could without the aid of a glass, and neither by my eye nor my finger could I detect the vestige of a tooth on the maxillaries, intermaxillaries, tongue, palate, or vomer, the latter parts being of a pearly whiteness, and as smooth as glass.

The pharyngeal bones were also toothless, but the branchial arches were armed with erect rakers, precisely as described in the last-named species.

The colors of this fish were the most beautiful, lustrous, and brilliant, that I ever witnessed—the back, of a rich iridescent blue, changing to greenish; the sides, cheeks and gill-covers, glittering like mother-of-pearl, and the belly sparkling like molten silver; the fins, of a bluish green; the caudal very deeply forked; the lateral line nearly straight.

This exquisite and beautiful fish, so far as is known, is found only in the Otsego lake, the head waters of the Susquehanna river; but it would be very curious to compare it with the so-called White-Fish of Chatauque lake, a locale very similar to the Otsego, equally cut off from communication with other waters, and at about an equal elevation above tide-water. I greatly suspect that the *Coregoni* of these two mountain lochs would prove identical.

The habits of the Otsego Lavaret are but little known. It is gregarious, however, and rushes in vast shoals, early in spring, to all the shallow waters and shores of the lake, for a few days, during which he is taken in vast numbers; after that time, he retires to the coldest depths of the lakes, and is seen no more until autumn, when he again makes his appearance for the purpose, it is supposed, of spawning, although the period at which the ova are deposited does not appear to be clearly ascertained, nor whether the spawning-beds are in the shoal waters of the lake, or at the mouth of its feeders.

It is lamentable to think, though but too true, that through the wanton improvidence of the early settlers, who dealt with this delicious

fish much as the New Brunswickers do with the Capelin, literally, I believe, feeding their hogs with them, they have already visibly declined in magnitude, as well as decreased in number.

They were formerly taken, weighing up to four pounds; but now, the half of that weight is regarded as an unusually fine fish The specimen which I have described above weighed two pounds and three ounces, and was an uncommonly well-fed and delicious fish.

With regard to their food, I can say nothing definitely; the stomachs of those which I examined contained nothing but a blackish, earthy substance, which resembled decayed vegetable matter, and some small fragments of worms, or larvæ of insects.

I observed no thickening of the stomach, nor anything which seemed to indicate their feeding on any shell-fish or molluscæ.

Mr. Cooper informs me that he recollects but a single instance of one of these fish being taken with a bait The fly, however, might possibly prove more successful.

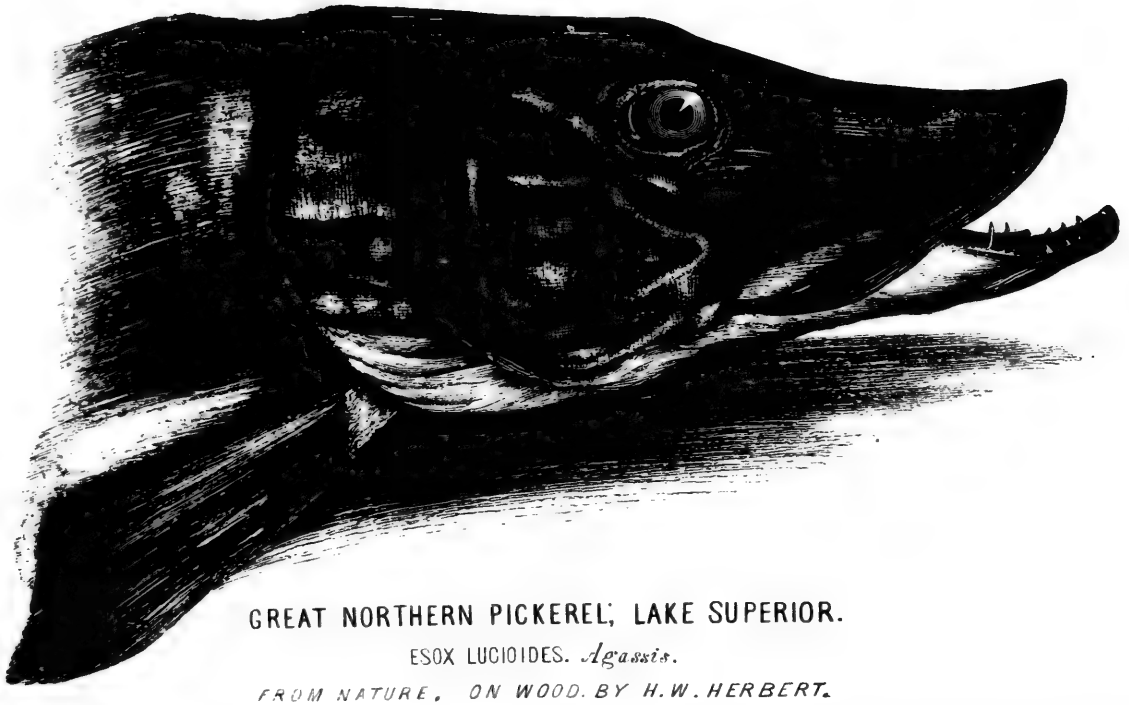
The rarity, excellence, and peculiarity of the Oswego Lavaret, entitle him to a place, as well as the noble race of which he is a member, though in some degree destitute of the game qualities of his order. My principal object, however, in introducing him in this place, was first, to present the whole family of American *Salmonidæ* to my readers, as complete as possible; and secondly, to reclaim with all my might against the absurdity of calling this fish a Bass, of the family *Percidæ*, to which it has neither resemblance nor kindred.

This absurdity, if possible, is rendered more flagrant by the fact that there is yet another fish as distinct from this as possible, designated as the Oswego Bass, though it is no Bass either, but a *Corvina*, of the family *Scienidæ*, called also the Lake Sheep's-Head, which, from the similarity of title, is frequently confounded with this *Coregonus*, or Lavaret, and also with the Black Bass of the St. Lawrence, which, for the third time, is not properly a Bass, *Gristes Nigricans*, and which is again, through the similarity of names, confused with the Sea Bass, *Centropristes Nigricans*, who is also blunderingly called Black Bass. So that we have actually four fish as different one from the other as any four things can be, all blundered up together in confusion worse confounded, owing to the timidity of naturalists hesitating to alter a misnomer originating in the ignorance of those who

were naturally ignorant. The scientific name and characteristics of this fish are well established, as *Coregonus Otsego*, the English of which, being interpreted, is "the Otsego Lavaret." And now, why should not the stupid blunder of Bass be consigned to the oblivion which it deserves, and the true appellation be applied to the fish—an appellation which assigns to this the last, not least, of the American *Salmonidæ* a local habitation and a name?

At the last moment, I quote from a very clever writer under the signature of the "Naturalist," from the Spirit of the Times, confirmatory of my opinion with regard to the taking of this class of fishes with the fly:

"Besides the Salmon and Spotted Trout, the *Coregonus Albus*, or White Fish, is abundant in the Chateaugay lakes. In the latter part of June and early part of July they take the artificial fly freely; in winter, they may be often taken through the ice with the worm. I myself caught one of three pounds weight, with a worm, while fishing off the rocky shore, (the shores of both lakes are mostly rocky,) for the Speckled Trout."



GREAT NORTHERN PICKEREL, LAKE SUPERIOR.

ESOX LUCIOIDES. *Agassiz.*

FROM NATURE. ON WOOD. BY H.W. HERBERT.

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THIS family, the *Esocidæ*, of which the true Pike, *Esox Lucius*, of Europe, is the type, is largely represented in the waters of the United States and the Provinces; six or seven distinct species having been discovered, exclusive of the formidable Garpike, *Esox Osseus*, of the south-western waters, which, instead of scales, is cased in a complete armor of rhomboidal plates; and which is held, by Mr. Agassiz and other distinguished naturalists, to be a connecting link between the animals of the present period and those contemporaneous with the *Saurians*, and other extinct races.

The fish of this family are distinguished, generally, by the want of the second dorsal or adipose fin, by the situation of the dorsal very far backward and opposite to the anal fin, and by having the border of their upper jaw either formed solely by the intermaxillaries, or by having the labials destitute of teeth, if they enter at all into its composition. The mouth is always large, and the teeth sharp and powerful, but the shape and proportional length of the jaws vary greatly in the various species, as do the situation and number of the teeth, and the formation of the gill-covers; and by these particulars are the species distinguished.

The principal of these various species, are—

THE MASCALONGE, *Masqueallongè*, *Esox Estor*, of the great lakes;

THE NORTHERN PICKEREL, *Esox Lucioides*, of the same waters;

THE COMMON PICKEREL, *Esox Reticulatus*, of all the ponds and streams of the northern and midland States.

THE LONG ISLAND PICKEREL, *Esox Fasciatus*, probably peculiar to Long Island, formerly Nassau Island, on the southern coast of New York.

THE WHITE PICKEREL, *Esox Vittatus*, of the Ohio, the Wabash, and others of the western waters.

And THE BLACK PICKEREL, *Esox Niger*, of Pennsylvania.

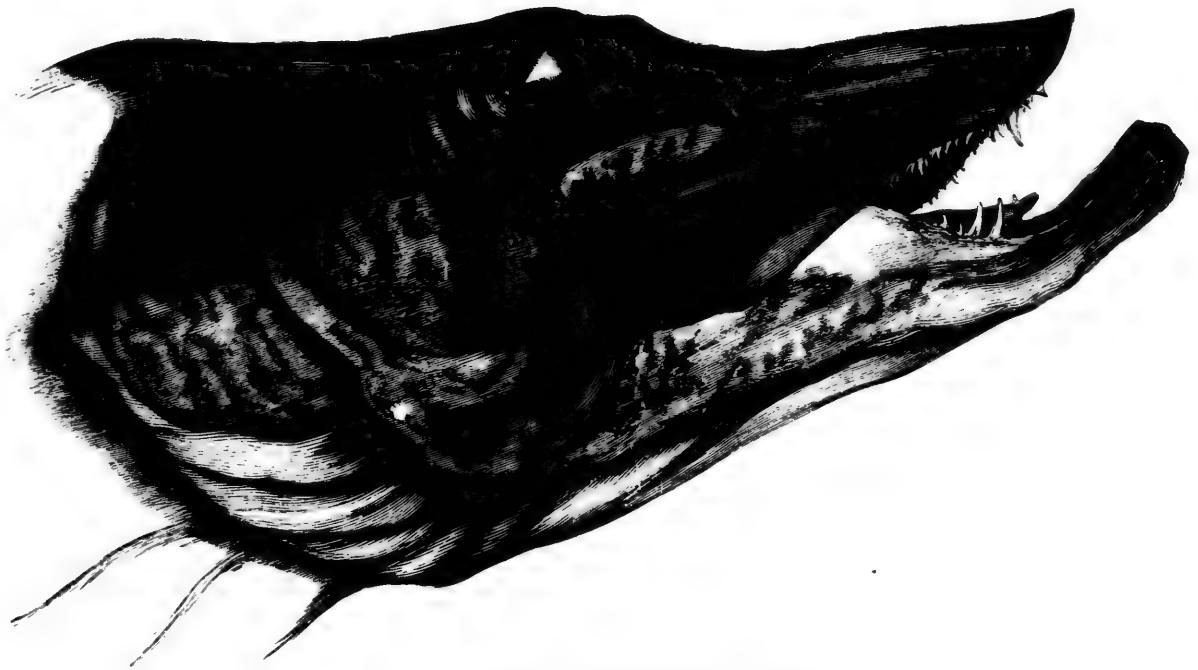
Of all these species, the first two form the type, all the others fol-

lowing the formation of the head, which is remarked in one or other of these, as regards the comparative length of the snout, the formation of the lower jaw, the dental system, and the gill-covers. So marked is this difference, that in addition to the wood-cuts of the entire fishes, I have thought it well to give large representations of the heads of these two noble fish; and by examining these with a little care, and comparing them with the heads of any of the smaller varieties, it will be easy to distinguish to which type any one of them belong.

Thus, any person will at once perceive that the Common Pickerel, in the comparative length of the jaws, and the beak-like form and scanty dentition of the lower mandible, follows the type of the Muscalonge; while the Long Island species resembles, in the short obtuse snout, and extension of the teeth to the tip of the lower jaw, the Northern Pickerel.

The same thing will be found to be the case with all the other subspecies, although the differences between them are so trifling, and so purely technical, while their general resemblance is so great, and their habits so entirely similar, rendering it impossible to mistake them for fish of any other family, that I have deemed it superfluous to multiply examples, or to give specific descriptions of more than the first four species; contenting myself with enumerating the others, and indicating the localities in which they are to be found, which will be altogether sufficient, in order to prevent confusion.

Note to Revised Edition.—Another species of this voracious fish, *Esox Phaleratus*, is laid down in some books, but it does not seem that any of the three, *Niger*, *Vittatus*, or *Phaleratus*, are very clearly made out as permanent and distinct varieties. Their habits, haunts, and manner of feeding are all nearly identical; and until a more complete search of the western and southern waters has been made, it is useless to attempt going into minutiæ of this kind. It is a singular fact, as stated by Richardson, that no Pike or Pickerel has ever been taken in waters west of the Rocky Mountains.



MASCALONGE: NORTHERN LAKES.

ESOX ESTOR. *Auctorum.*

FROM NATURE. ON WOOD. BY H. W. HERBERT.

ABDOMINAL.
MALACOPTERYGII. ESOCIDÆ.

THE MASCALONGE.

Masqucallongè; Canadian French.—*Esox Estor*; Cuvier, Agassiz.

THIS magnificent fish, which is the finest, largest, and most excellent food of all the Pike family, is found only in the great lakes and waters of the St. Lawrence basin, not having been discovered in any of the rivers or lakes which discharge themselves into Hudson's Bay or the Polar Sea, nor yet, so far as I have been able to ascertain, in any of the smaller lakes of the United States which shed their waters northerly into the St. Lawrence. It is stated that "in the spring, which is its spawning season, it frequents the small rivers that fall into Lake Simcoe"—which discharges itself by the Severn into Lake Huron—and that it feeds on small, gelatinous, green balls, which grow on the sides of banks under water, and on small fishes."

This great Pike is said, by Dr. Richardson, to attain the weight of twenty-eight pounds, but it unquestionably grows to a very much larger size, though I cannot state, with precision, the greatest dimensions that he has been known to acquire. Dr. DeKay says that he has been known to exceed four feet in length, which, having in view the breadth and depth of this fish when in condition, would give a probable weight of sixty or eighty pounds, which I believe to approach his maximum. He is a bold and most voracious fish.

The cut accompanying this paper, and the following description, are taken from a specimen preserved in spirits, in the possession of Professor Agassiz, of Harvard University, which measured about two feet and a half in length, and weighed eighteen pounds.

The length of the head to that of the whole body was as two to nine.

The snout, from the orbit of the eye forward, singularly elongated and acute. The anterior edge of the orbit, midway between the tip of the snout and the posterior margin of the free gill-cover. The border of the upper jaw is formed of the maxillaries alone, the edges of

FROM NATURE. ON WOOD. BY H.W.HERBERT.

which are furnished with several rows of long, powerful, and exceedingly sharp, awl-shaped teeth, the points curving slightly forward. The vomer and palatine bones are covered with card-like clumps of spiny teeth, as are the base of the tongue, and the pharyngeal bones. The tongue itself is soft.

The lower jaw is considerably longer than the upper; it is armed for something less than half its length with very powerful recurved fangs, the two largest being in front, a little posterior to the tip of the tongue. Beyond these, the lower jaw is toothless, curved upwards, with sharp, horny, beak-like edges; and in these points, particularly, is it distinct from the following species.

Of the gill-covers, the preoperculum is nearly vertical, and but slightly curved, the operculum much higher than it is broad, and nearly four times as high as the suboperculum, which is slightly rounded posteriorly. The branchiostegous rays are eighteen in number.

The body and head are quadrangular, flattened above, and much compressed at the sides. The dorsal fin is directly above the anal, the caudal powerful and deeply forked.

The fins, according to Professor Agassiz' singularly precise mode of enumeration, contain—the dorsal, twenty-two fin rays; anal, twenty; ventral, thirteen; pectoral, eighteen. The main part of the caudal fin is divided into two somewhat unequal lobes, containing, the upper, nine; the under, eight fin-rays; while above and below the two larger lateral rays there are nine smaller rays.

In color, it differs from the Northern Pickerel in having the general tint of the body lighter than the markings. The back and upper part of the sides are dark, changing from greenish blue to bluish gray, on the sides, which are irregularly dashed with darker spots and splashes. When exposed to a strong light, every scale reflects bright colors, which vary as the fish is moved; but there is no fixed pale mark on the tip of the scales, as in the succeeding species.

The Mascalonge, which owes its name to the formation of the head —*masque allongè*, long face or snout, Canadian French—but which has been translated from dialect to dialect, maskinonge, muscalunge, and muscalinga, until every trace of true derivation has been lost, is said to be much more common in Lakes Erie and Ontario than in the more northern waters of Canada; but this will, I fancy, prove to be

erroneous, as I know them to be taken of great size, and remarkable excellence, in Lake Huron.

It is the boldest, fiercest, and most voracious of fresh-water fish; and there is none, unless it be the Great Lake Trout, that can offer any adequate resistance to his attacks. It is said that even the spiny dorsals of the *Percidæ* do not protect them from his ravenous attacks.

He bites daringly at a dead bait played with spinning-tackle, or even with a simple gorge and trolling-hooks. He is, moreover, readily taken with that murderous instrument, the spoon, or even by a bait of tin or red cloth, made to play quickly through the water.

Before passing to the next species, I cannot but pause to notice a strange error of nomenclature, in Mr. Brown's comprehensive little volume, "The American Angler's Manual," to which I have alluded before, by which he transforms the term *Esox*, the specific name of every member of the Pike family, as assigned by Linnæus, into the *Essex*, which he appears to conceive a distinctive term peculiar to the Mascalonge, which he calls "the Essex or Muscalinga of our western lakes." I note this error, not from any desire to underrate a useful and valuable little book, but merely to guard against its adoption by anglers in general.

NOTE TO REVISED EDITION.—The Mascalonge is, as I presumed above, and have verified by personal observation, vastly more abundant, and infinitely larger, and in all respects superior in Lake Huron to those in the lakes below; indeed the superiority of all kinds of fish in those cold, pure, deep waters, improving the farther you go northward, to those in the muddy shallows of Lake Erie, cannot be believed until it is learned by experience

GREAT NORTHERN PICKEREL.

Esox Lucioides; Agassiz.

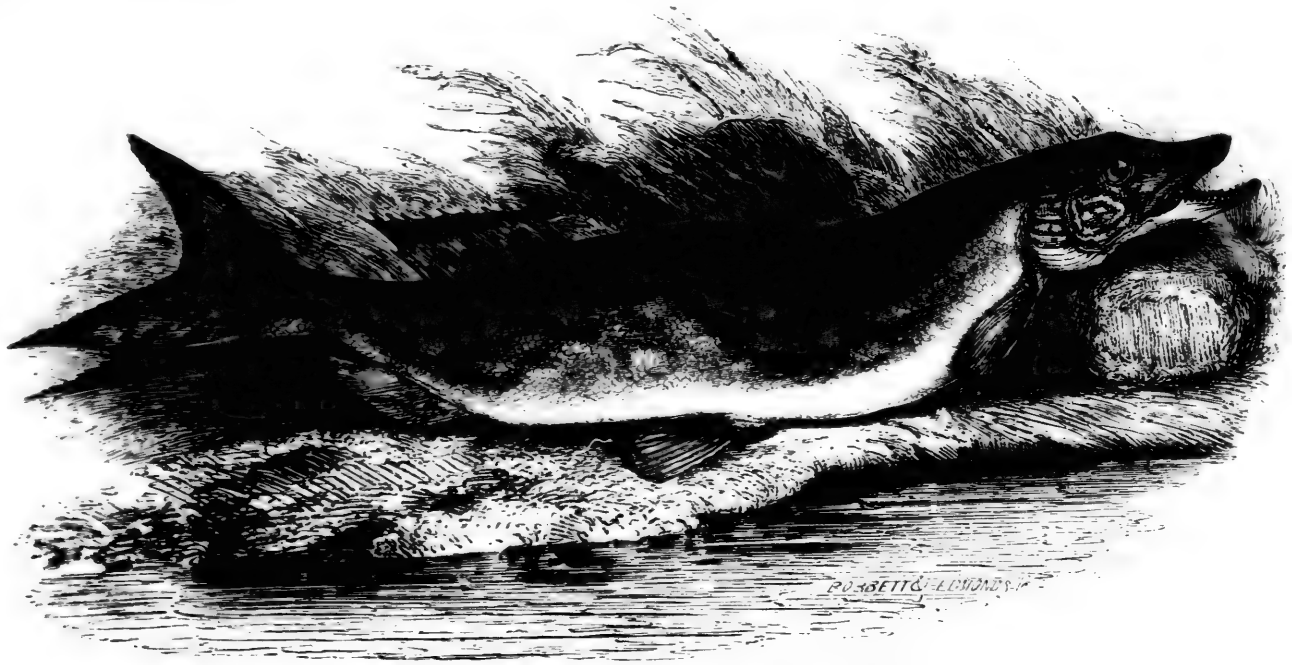
This great Pike, like the last, is peculiar to the basin of the St Lawrence, and was first clearly described and specified during the scientific tour to Lake Superior, which I have already mentioned, by Prof. Agassiz, who pointed out its distinctions, both from the European Pike, and the Mascalonge, to the former of which, *Esox Lucius*, it is by far the most closely allied, although it appears to have been confounded with both—*Le Sueur*, who first gave a distinct specific name to the Mascalonge, having described it as the fish now under consideration, *Esox Lucioides*, and not at all as *Esox Estor*.

The Northern Pickerel is taken up to the weight of sixteen or seventeen pounds, but rarely, I believe, exceeds that weight. It is an exceedingly handsome fish, longer and slighter, in proportion to its depth, than the Mascalonge.

Its body is four-sided, the back broader and flatter than the belly; the vertical diameter is equal to about one-seventh of the body, caudal included; the transverse diameter is two-thirds of the vertical; the body carries its thickness to the dorsal fin, and then tapers into the thin tail; the sides are compressed and flattened; the head is about one-fifth the length of the body; the snout not nearly so long, and much more obtuse, than in the Mascalonge; the under jaw does not exceed the upper in length nearly so much as in that fish, and is armed around all the fore part with a single row of small, slightly-hooked teeth; on the sides of the lower jaw are a row of larger awl-shaped teeth, implanted in the bone; the palate bones, vomer, and pharyngeal arches, are all armed with bands of small sharp teeth, like carding machines, as in the former species; the tongue is broad, and truncated at the tip.

The gill-covers are nearly as they are described in the Mascalonge,

FROM NATURE. ON WOOD. BY H.W. HERBERT.



NORTHERN PICKERELL GREAT LAKES.

ESOX LUCIOIDES. *Agassis.*

FROM NATURE. ON WOOD. BY H.W. HERBERT.

except that the edge of the suboperculum is straighter and more vertical, and that the opercula are in a slight degree scaly.

The gill-openings are very large; and the branchiostegous rays are fifteen in number, or more numerous by two than in the English Pike, which differs from the Northern Pickerel moreover in the number of all the fin-rays, in having the cheeks and opercula covered with regular scales, as in the *Esox Reticulatus*, and in the teeth on its vomer and palatine being dispersed into lines, rather than planted in serried patches.

The Northern Pickerel has dorsal fin-rays, twenty-one; anal, eighteen; caudal, seven above and seven below the larger lateral rays; the whole caudal divided into two unequal lobes, the upper of nine, the lower of eight rays; the ventral eleven, and the anal sixteen.

The back of this beautiful fish is of a rich blackish green, which changes on the sides to greenish gray; there is a bright speck on the tip of each scale, which gives a singularly light and sparkling aspect to the whole fish. The belly is of a lustrous pearly white. There are several rows of oblong, diamond-shaped, yellowish gray spots on the sides of the head, body and tail. The cheeks are varied with emerald green reflections, the under jaw and gill-rays white; the irides purple, with a golden band around the pupil; the dorsal and caudal fins are blackish green, marked with patchy bands of a darker oil green; the anal greenish gray, with orange margins, and a few dark spots; the ventrals the same, with orange tips, but without spots; the pectorals dusky yellow.

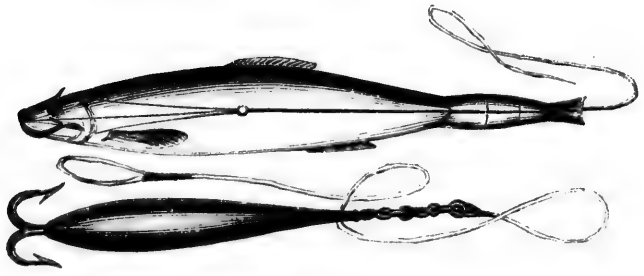
The Northern Pickerel is equal in boldness and voracity to the Mascalonge, and to the northern European Pike, from which he differs in the fin-rays, dental system, gill-covers, and very essentially in the coloring—the Pike being banded or mottled, and having no indication whatever of the regular rhomboidal spots which mark the sides, and form a characteristic of the Northern Pickerel.

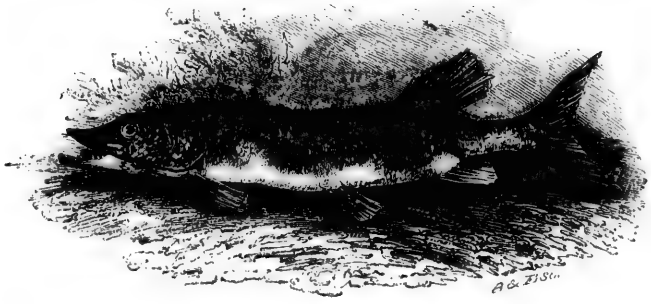
He takes any sort of bait in spinning or trolling, and being readily captured by set baits through the ice, forms a very essential article of food to the Indian hunter when the chase fails him. No animal food of any kind comes amiss to this fresh-water tyrant. Fish of every variety, even his own species, and the spiny Pearch, the immature young of wild fowl, rats, reptiles of all sorts—in short, every living

thing that comes within his reach, ministers instantly to his voracious appetite.

But the baits by which he is most sportingly secured are the small bright *leucisci*, or shiners, at the end of a double swivel trace, or a live frog, which he can rarely refuse.

NOTE TO REVISED EDITION.—I have recently been informed by a correspondent, that this fish, or the Mascalonge, is taken in the Connecticut, near Bellow's Falls. That he himself has captured it, and is assured of its being wholly distinct from the common Pickerel, with which he asserts himself to be, and of course is, conversant. He also adds, that it has only been known in those waters within a limited number of years; and that it is the popular belief that it was introduced into the Connecticut by the breaking out of a new outlet from some mountain lake. If this be so, it is a strange fact, as this fish was only distinguished as belonging to the great lakes, last year, 1848, by Professor Agassiz, who considers it peculiar to them; and the Mascalonge has been hitherto distinctly limited to the St. Lawrence basin. This fish was considered by Richardson, as identical with the English Pike, *Esox Lucius*, which it is not, though nearly allied to it, whence its name, *Lucioides*.





THE COMMON PICKEREL.

Esox Reticulatus; Le Sueur.

THROUGHOUT the United States, excepting only the extreme western and southern waters, this is perhaps the commonest of all game fishes; from New England to the western limits of Pennsylvania, not a river, pond, or streamlet but abounds with this bold and rapacious fish; and it is probable that, like many other of the northern fish, he is found in the waters of the hill districts of Virginia, Carolina, and even of the Western States, although in such locations he is lost sight of among the tribes peculiar to those regions.

With regard to the Southern States, especially, it is almost impossible to arrive at anything like certainty concerning the species or varieties of game fish to be found within their limits, from the universal misapplication of names, and the unhappy tendency of sportsmen, to which I have already made allusion, to adopt any barbarous local misnomer, rather than to make themselves acquainted with the true specific names, and to learn the distinctions, so as to speak understandingly of the game which they take.

It is indeed a hopeless task to hunt up the real peculiarities and

true genera of fish, known in their own regions as the "Welchman," the "Pompano," and such other denominations, which of course are not to be found in any work of natural history, while the people, who are in the habit of taking them daily, can give you no information, nor indeed data, on which to found an opinion, except that they are "very like a whale," or a Trout, as it may be. I mention this here *en passant*, because I am perfectly prepared to find myself violently assailed, and pronounced utterly incompetent to prepare a book of this nature, because I have not included "that delicious fish, the pride of our southern waters, well known to the real sportsman, the noble 'Pompano,' or the unrivalled 'Welchman,' as it may be, in my list of game fishes." But I have made up my mind to peaceful submission, deeming it quite enough to have investigated the identity of what it amuses southern gentlemen to call "Trout," and Western New Yorkers "Bass" and "Sheep's-Head," without troubling my head about mere provincial barbarisms. I believe the "Pompano" to be of the Mackerel family, and the "Welchman," which is described as a bold biter at small fish, worms, and the like, to be a percoid fish, analogous to Rock-Bass, *Centrarchus Æneus*, or perhaps a *Corvina*, analogous to the *Malasheganē*, or Sheep's-Head of the lakes.

The Common Pickerel—to return to my subject—does not in general exceed five pounds, and in most districts this is considerably above his average, which does not, I think, go beyond two and a half or three pounds, but they are occasionally taken in the smaller lakes, and in some few of the more sluggish streams, of infinitely larger size, even so far, it is said, as to twelve and fifteen pounds' weight; but such instances are rare, even if they can be relied upon as facts —which I am somewhat inclined to doubt, thinking that they have probably been mistaken for some other cognate species.

In the year 1838, I myself took a Pickerel which weighed fifteen pounds three ounces, under Stillwater bridge, on the Hudson river, while fishing for Black Bass, *Gristes Nigricans*, with a large gaudy fly, and landed him, after a long and severe struggle, having only a light fly-rod, and neither gaff nor landing net, although I was fishing with a Salmon-reel, and one hundred yards of line.

I was not at that time sufficiently conversant with minute distinctions to say positively to what species this large fish belonged, and I

unfortunately took no notes at the time. According to the best of my recollection, however, it was a longitudinally spotted fish, and if so, was probably a stray Northern Pickerel, which had found his way down the canals, from the basin of the St. Lawrence, into that of the Hudson.

And this, which would at first seem a highly improbable, if not impossible hypothesis, becomes at once reasonable, when the fact is known that three, at least, of the fish peculiar to the great lakes and to the waters of the St. Lawrence have found their way into the Hudson and its tributaries since the opening of the various canals, and are now taken abundantly within the State of New York—these are the greater Black Bass, *Gristes Nigricans;* the Oswego—not to be confounded with the Otsego—Bass, *Corvina Oscula;* and the Rock Bass, *Centrarchus Æneus.*

Any of these species, in order to reach the Hudson, must descend the canals, and take advantage of the moment when the boats are passing through the locks, and the gates opened—which, when we consider the commotion of the water, the splashing, hubbub, and confusion which occurs at such times, is in itself sufficiently extraordinary, and seems to go far toward proving that fish, except as regards feeling, are much less shy than is commonly believed, and toward abolishing the idea that they are driven out of their favorite rivers by craft or steamboats.

If one species, however, can succeed in passing these numerous obstacles, there is nothing to prevent another from doing likewise; and it is in no respect more difficult to believe that the Northern Pickerel should so make his way to our southern waters, than that the varieties of Bass above-mentioned should—as it is well-established that they have done—introduce themselves as an indigenous fish in the same.

From what I have personally seen, therefore, of the Common Pickerel, *Esox Reticulatus*, I am a good deal inclined to doubt the tales I have heard of its great size; and, until I shall be satisfied, on personal examination, am unwilling to credit him with a growth exceeding six or seven pounds.

This fish, as will appear from examination of the cut, follows the type of the Mascalonge, in the elongation of the snout, the curvature

of the lower jaw, and the smallness, though not absolute deficiency, of teeth in the fore part thereof.

It is easily distinguished by its having its cheeks and gill-covers completely cased in small scales, and by the brownish lines on its flanks, occasionally intersecting each other, like the meshes of a net, whence the name *Reticulatus*.

In form this Pike closely resembles the others of his family. His body is quadrilateral, the back broader than the belly; the depth is to the entire length, including the caudal, as one to seven, the thickness is about two-thirds of the depth; the length of the head to the entire length is as one to four; the posterior edge of the orbit is midway between the tip of the snout and the posterior margin of the free gill-cover; the origin of the ventral fin is midway between the tip of the snout and the fork of the caudal; the termination of the caudal opposite to the origin of the anal; the gill-covers are nearly vertical, and very slightly rounded, except the margin of the suboperculum, which is very short as compared with the operculum; the branchiostegous rays are nine in number, dorsal fin rays twenty, pectoral sixteen, ventral ten, anal twenty, caudal eighteen, seven above and seven below the greater rays.

The back is of an olive green with blue reflections, the sides olive green fading into greenish yellow, with vertical lines of dull brown occasionally crossing one another, so as to form a sort of irregular network; the dorsal and caudal fins are of an olive brown clouded with green; the pectorals and ventrals greenish brown, margined with dull yellow; the anal dusky green; the irides golden yellow; the cheeks and opercula, which are covered with small scales, are olive green, with brownish marks and reflections. The snout brown; the lower jaw and gill-rays white; the belly white, marked with brown.

This is the Common Pickerel of the Middle and Eastern states; and is the fish intended, when the word Pickerel is used without the aid of any epithet or definition. It is rather a favorite fish; and has been injudiciously introduced into many fine Trout ponds and streams, which have in consequence lost all their attractions to the fly-fisher, but now swarm with this coarser and comparatively worthless fish.

He is a bold biter, and affords considerable sport when hooked; but is coarse, watery, and of small value on the table.

THE LONG ISLAND PICKEREL.

Esox Fasciatus; De Kay.

This, which is the smallest and most insignificant of the family, so far as its sporting or epicurean qualities are concerned, was first distinguished and named by Dr. DeKay, of New York.

Its principal characteristic is the very remarkable size of its scales, which, in most of the family, even in the enormous Mascalonge, are very minute and slender.

In this little denizen of the running brooks and clear Trout ponds of Long Island, the scales are larger than in any other of the family, so as to make it resemble, in that particular, some of the *Cyprinidæ*, rather than its own tribe.

In other respects, size excepted, it differs little from the other Pike, which follow the type of the Northern Pickerel, rather than that of the *Mascalonge*, to which variety it belongs; as is readily seen in the short snout, straight lower jaw, of this small fish, the latter carrying its teeth, of full size, quite round the fore part of the jaw.

The Long Island Pickerel rarely, if ever, in those waters, exceeds a pound weight, and that is greatly above the average, which is probably nearer one-half that size. It is less voracious also than the larger members of its family, and is said to be in no wise detrimental to the Trout, which literally swarm in the same waters. Indeed, its size would render it innocuous to anything beyond the small fry, as a

well-grown pound Brook Trout would be considerably more than a match for any of these little Pickerel which have come under my observation. In shape and general proportions, the Long Island Pickerel is not dissimilar to the species last described, the head alone excepted, which, allowance being made for the difference of size, and the scaliness of the cheeks and opercula, is, in all respects, similar to that of the Great Northern Pickerel.

Its gill-covers do not materially differ from those of the Common Pickerel, except that the lower margin of the suboperculum is something more oblique, giving the posterior edge of the free margin rather an angular form.

The branchiostegous rays are four in number; the dorsal fin-rays twenty-two, pectoral sixteen, ventral ten, anal eighteen, and caudal eighteen, seven above and seven below the greater rays.

Its color is olive green, darker on the back, and fading into greenish yellow on the sides, irregularly barred with transverse waving bands of dusky brown, whence its designation of *Fasciatus*. The fins are brownish green, generally without spots or bars; the pectorals and ventrals the palest, and bordered with dingy yellow.

Before closing this paper I would mention a very remarkable specimen of this fish, which was kindly sent to me by my friend, Mr. William Pennington, of Newark, who perceived that it was a fish of unusual character, and knowing that I was engaged in this work, took some pains to procure me a sight of it.

This individual was caught in a net in the salt-water, in the lower part of Newark bay, and at first sight I was inclined to believe it a nondescript species.

It weighed something over a pound and a half, was unusually thick in proportion to its depth, and was in the finest condition. Its color, however, was the most remarkable; for the back and sides, down to the lateral line, were of the richest and most lustrous copper-color, paling on the sides into bright brazen yellow, with the belly of a silvery whiteness. The cheeks, gill-covers, and fins all partook of the same coppery hue, and the whole fish was far more lucent and metallic than any of the family I had before seen. There was not the slightest indication of any transverse bars or of any mottling; nor was there any of that sea-green color which is so peculiar to the Pike family.

On a minute examination, however, of its characteristics, and especially of the size of its scales, I was perfectly satisfied that it was neither more nor less than an individual Long Island Pickerel, *Esox Fasciatus*, which, having wandered into salt-waters, had thus entirely changed its colors, and grown to a weight exceeding its natural average, in the ratio of at least three to one, probably from the superiority and greater abundance of food which he found in his new hunting grounds.

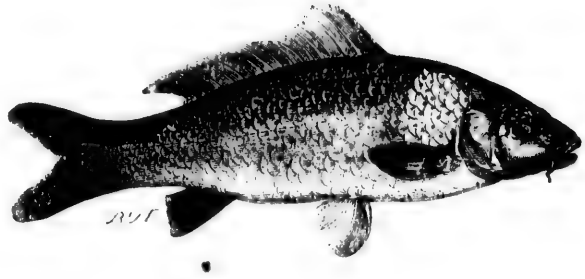
I did not myself taste the fish, but was informed that it was of very unusual excellence.

I never saw a more striking instance of the effect which different waters have upon the coloring and condition of fishes, than in this Pickerel; nothing was left unchanged except those specific characters on which alone permanent distinctions can be founded; and without a knowledge of which, the quickest observation is useless, so far as assigning their places to any of the animal kingdom.

In addition to the four species above described, there are laid down in the books three others, beside the hideous Garpike, or Alligator Gar, *Esox Osseus*, of the West.

These are the *Esox Niger*, *Esox Phaleratus*, *and Esox Vittatus*, of the western waters, all which are so closely allied, and so closely similar in habit, that there is no object in occupying space in their description, the rather as they are well known, and not liable to be mistaken for others of the same family.

NOTE TO REVISED EDITION.—I have observed a statement of a correspondent to the N. Y. Spirit of the Times, that I have erred in assigning one to one and half pounds as the limit of growth to the Long Island Pickerel, *because he had killed Pickerel of four pounds and upward on Long Island.* The common Pickerel, *Esox Reticulatus*, which grows to five and even seven pounds, is taken on Long Island, but is not, therefore, or for other cause, the *Long Island Pickerel*, which was scientifically distinguished from it by DeKay, on account of its diminutive size and large scales. The distinction has been allowed by Agassiz, and all eminent naturalists.



THE COMMON CARP.

Cyprinus Carpio; Linnæus, Cuvier.

Of this family, *Cyprinidæ*, the principal characteristics are a mouth slightly cleft; weak, and generally toothless jaws; pharyngeal bones strongly dentated; one dorsal fin; branchial rays few in number; to which may be added large fleshy lips, and bodies covered with large scales.

It comprises eighty or ninety well-known American species, not one of which is worthy of notice, as either a fish of sport or a dainty. There are in America no Carps proper, indigenous to the country—no Barbels—no *Cobitis*, or loaches. *Leucisci*, analogous to, though by no means—as stated by Dr. J. V. C. Smith, of Massachusetts—identical with the Chub, Roach, Dace, and Bleak of Europe, are found in abundance under the above names, but still more commonly as *Shiners*. The genus *Abramis*, Bream, has again several representatives in the waters of North America, but none, either of this or the last subgenus, can attain to dimensions which lead the angler to trouble himself about them, unless it be as bait for other fish, as Pike and Pearch, for which purpose several of these fish are better adapted than those of any other family, unless it be the young fry of the *Salmonidæ*, while in their Parr form.

In lieu of those genera, however, which exist in England and on the continent of Europe, but entirely lack American representatives, several prevail here which are totally wanting in Europe, as the genus *Labeo*, the genus *Catastomus*, Suckers, or Sucking Carp, many varieties of which are found throughout the waters of the United States and Canada, from north to south, and many species of *Hydrargyra*, analogous to the European Minnow.

Several of these last species are of great interest to the naturalist, the *Catastomi*, or Suckers, especially, from the singular formation of their mouths, which are situated far below and posterior to the tip of the snout, and furnished with crimped and pendant labials, adapted for the deglutition of vegetable substances and even of mud; but to the sportsman they are of no account, as they do not take the bait, and are worth little as bait themselves, while, by the epicure, they are justly held in utter scorn.

The truth is, that nowhere under the canopy of Heaven are the genus *Cyprinus* worthy to be accounted sporting fishes, and nowhere are they eatable—not even excepting the Carp and Tench of Europe—unless with the aid and appliances of a most careful cuisine, and by dint of stewing in claret, with condiments and spices, garlic and force-meat balls, and anchovies, such as might convert a kid glove, or the sole of a reasonably tender India-rubber shoe, into delicious esculents.

The shyness of the Carp in biting, the great size of the Bream and Barbel, and even in some waters of the Chub, induce bottom-fishing anglers at home to take some pleasure in their pursuit and capture, but that is invariably in such slow and sluggish waters as contain no gamer or more delicate fish; and the dull, logy, watery fish themselves, and the cockney punt-fishers, who aspire to take them, are held in about equal esteem, or disesteem, by those who know what it is to throw a long line lightly, with a cast of flies, for the vigorous-speckled Trout, or to spin, or even troll, with the Parr or Minnow, for the savage and voracious Pike or Salmon

In America, none of the *Leucisci*, Chub, Roach, Dace, or Shiners, and none of the *Abramis*, Bream, exceed nine or ten inches in length and consequently are never subjects of more serious pursuit than the holiday crooked-pin and angle-worm fishing of schoolboys. They are

the detestation of the Trout bottom-angler, constantly nibbling away his bait, and tantalizing him with vain hopes of a bite.

Of this family, therefore, so far as the true American genera are concerned, no notice need be taken in a sporting work, except as relates to two or three little fishes, to which I shall devote a few lines each, as being excellent bait for all the larger and bolder fishes.

Within the last few years, however, two European varieties have been introduced, and have become entirely naturalized in some of our waters. The Gold Carp, *Cyprinus Auratus* of Linnæus and Cuvier, or common Gold and Silver fish of China, in the Schuylkill, and in some streams of Massachusetts, and the Common Carp of Europe, whose title stands at the head of this paper, in the Hudson, especially in the vicinity of Newburgh.

The former of these little fish is, indeed, unworthy of notice, except as an ornamental fish, to be kept in garden tanks and fountains; but the other being much, though I must confess in my opinion *undeservedly*, esteemed in Europe, and having been deemed worthy of legislative enactments for his protection, by the State of New York, I shall proceed to describe as a species, which, within a year or two at the farthest, will come within the American angler's list of game.

The mode of this fish's introduction into American waters, is as follows:—Captain Robinson, who has a fine place immediately on the banks of the Hudson river, containing some fine fish ponds, between Newburgh and New Windsor, imported some years since a quantity of Carp at considerable expense, I believe from Holland, where the species is very abundant and very fine in quality. His ponds were soon admirably stocked; but in process of time a heavy freshet carried away his dams and flood-gates, and a very large proportion of his Carp escaped into the Hudson. This fact being represented to the Legislature of the State, a penal enactment was passed, heavily mulcting any person who should take any one of these Hudson river Carp, at any season or under any circumstances, until after the expiration of five years from the passage of the act.

The provisions of this bill have been strictly enforced; several persons have been fined, and the fish is now extremely abundant.

I cannot here, in relating these circumstances, control myself, but

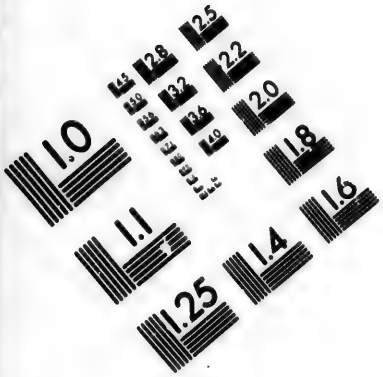
must invoke the contempt and indignation of every gentle sportsman, every reasonable thinking man, upon the heads of that ignorant, motley, and *destructive* assemblage, which is entitled the Senate and Assembly of New York. For the last fifteen years not a session has passed without the strenuous and sustained attempts of the most educated and most influential gentlemen of the State, both of the city and the agricultural counties, to induce the *faineant* demagogues of that assembly to take some measure to prevent the total extinction, within that very county of Orange, of some of the noblest species of game in existence, indigenous to that region, and once abundant, but already scarce, and within two or three years certain to be lost altogether, through the mal-practices of pot-hunters destroyers, the errors of the existing game-laws, and the difficulty of enforcing them in their present state.

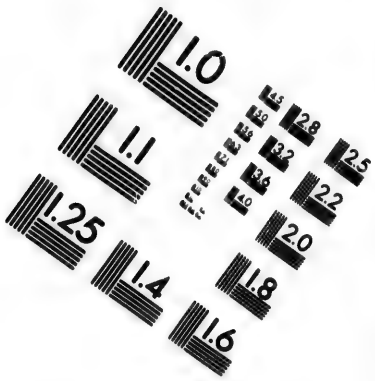
It is quite unnecessary to state that these efforts were wholly ineffectual—that it was found impossible to induce those learned Thebans to do anything to prevent American Woodcock from being shot before they are fledged, and American Brook Trout from being caught upon their spawning beds; but that no sooner is a coarse, watery, foreign fish accidentally thrown into American waters, than it is vigorously and effectively protected, which protection was merely granted, I believe, to enable "*a facetious member of the legislature*," as he is styled by the learned Doctor Bethune in his fine edition of Walton's Angler, to draw a witty comparison between the naturalization of "scaly foreigners" and Irish voters. I dare say the facetious member was not devoid of hopes that the scaly foreigners would some day or other vote for him.

It is impossible to feel anything but contempt for such unutterable blockheadism, while it is equally impossible to expect anything better, after their recent exhibitions in the legislatorial line, from such a body as the New York Houses of Assembly.

Since, however, their wisdom has pronounced that henceforth the Carp is to be a game fish of America, I shall proceed to describe this "scaly foreigner," thus naturalized with a five years' exemption from liability to capture, in the waters of Hudson's river.

The European Carp is one of the fish which has been the longest known and esteemed, being mentioned by Aristotle and Pliny,





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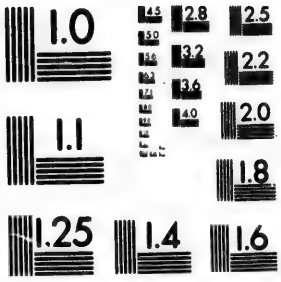

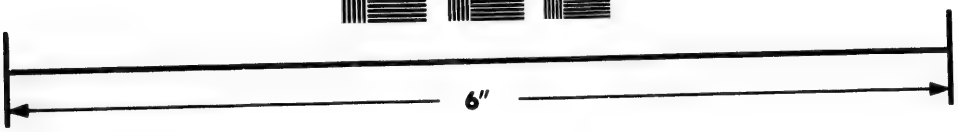

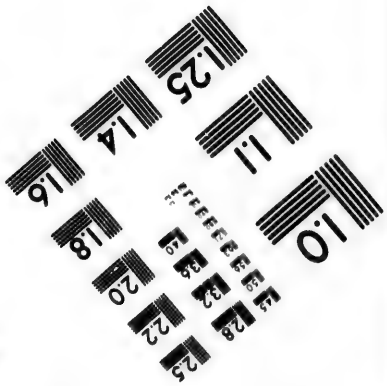

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although they do not at that period appear to have attained their present celebrity. They are found in most of the lakes and rivers of Europe, but thrive best in the more temperate southern districts, degenerating when they are carried farther north. It is said that in Russia they are even now unknown. "Their growth," says Mr. Yarrel, "is, however, particularly cultivated in Austria and Prussia, and considerable traffic in Carp prevails in various parts of the European continent, where an acre of water will let for as much yearly rent as an acre of land, and where fresh-water fishes, as articles of food, are held in higher estimation than in this country."—Mr. Yarrel means England, but the observation is even more applicable to the United States than to Great Britain. "Carp," he continues, "are said to live to a great age, even to one hundred and fifty, or two hundred years; but they lose their rich color—their scales, like the productions of the cuticle in some other animals, becoming gray and white with age."

The exact period of the introduction of the Carp to England is unknown, but it is mentioned in the Boke of St. Albans, by Lady Juliana Berners, printed in 1496, and the great probability is that it was naturalized from the continent, probably from the Low Countries, or Austria, previous to the suppression of the monastic institutions.

The Carp thrives best in ponds or lakes, and in such parts of rivers as have a slow, lazy current, and a muddy or marshy bottom.

"They are very prolific," I again quote from Mr. Yarrel, "breeding much more freely in lakes and ponds than in rivers. Bloc found six hundred thousand ova in the roe of a female of nine pounds' weight, and Schneider seven hundred thousand in a fish of ten pounds' weight. They spawn toward the end of May, or the beginning of June, depending on the temperature of the water and the season; and the ova are deposited upon weeds, among which the female is followed by two or three males, and the fecundation of a large proportion of the ova is by this provision of Nature effectually secured; but they both breed and grow much more freely in some waters than in others, without any apparent or accountable cause."

The Carp, and indeed the whole family of *Cyprinidæ*, are the least voracious of all fishes, and the least addicted to animal food, the larvæ of insects, worms, the softer and more gelatinous parts of aquatic plants, and even vegetable mud, furnishing them with ample subsist-

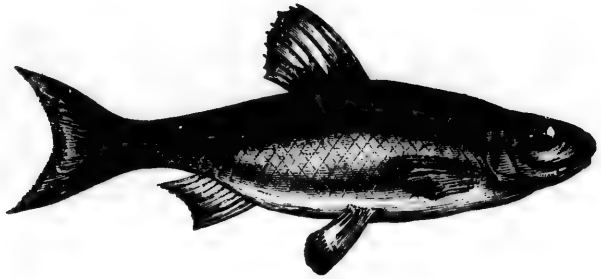
once. During the winter, it is believed that they eat little or nothing, and lie, half-torpid, in the mud. They are extraordinarily tenacious of life, and can be kept alive in a cool place for many days, and even weeks, if placed in wet moss, and fed on bread steeped in milk. This peculiarity renders them very easy of transportation.

They are slow of growth, not arriving at the weight of three pounds before their sixth, or ten before their ninth year; they arrive, however, ultimately at a very great size, having been taken up to eighteen pounds, at which ultimum they are nearly as broad as they are long, measuring thirty inches in length by twenty-two or three in depth.

"They are in season for the table," says Yarrel, once more, "from October to April, and are greatly indebted to cooks for the estimation in which they are held.

"The mouth is small; no apparent teeth; a barbule or cirrus at the upper part of each corner of the mouth, with a second smaller one above it on each side; the nostrils are large, pierced at the second-third of the distance between the lip and the eye. The eye is small; the operculum marked with striæ radiating from the anterior edge; nape and back rising suddenly. The dorsal fin-rays are twenty-two in number, the pectorals seventeen, ventrals nine, caudals nineteen. The first dorsal fin-ray is short and bony, the second also bony and strongly serrated posteriorly. The first anal fin-ray is also bony and serrated posteriorly. The tail forked, the longest rays as long again as those of the centre. The caudal rays of the two halves of the tail always unequal in number in the *Cyprinidæ*. The body covered with large scales, about twelve rows between the ventral and dorsal fins; the general color golden olive brown, head darkest; insides golden; belly yellowish white; lateral line interrupted, straight. Fins, dark brown."

This fish is very well adapted for keeping in muddy stew ponds, when he will become very fat, and can be used with advantage when no other fish is to be procured.



THE AMERICAN ROACH.

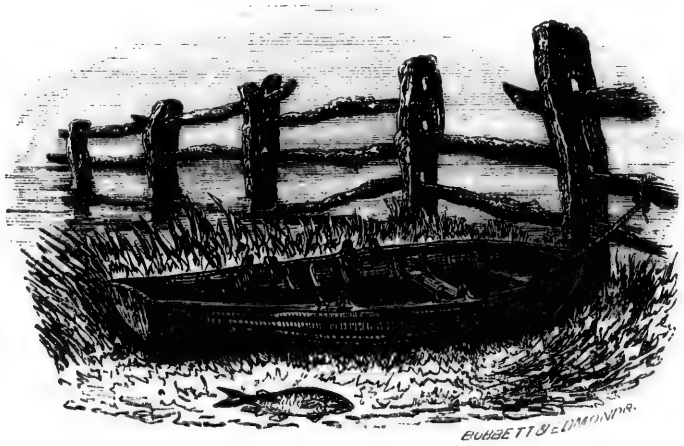
LEUCISCUS RUTILUS

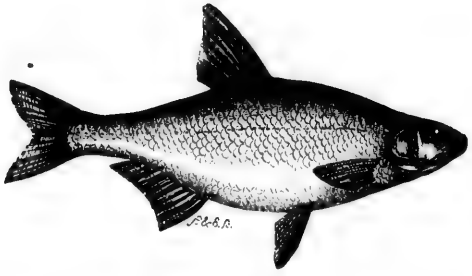
THE AMERICAN ROACH is a pretty, lively little fish, common to most of the ponds and small running streams of the Middle and Northern States, and is closely analogous to the European fish of the same name, although it never approaches it in size. In England the Roach has been taken up to the weight of five pounds, in the United States it rarely exceeds five or six inches in length, and together with its congeners, the Chub and Dace, as they are generally termed, though none of them identical with the European species, are seldom taken except by schoolboys, and never put on the table except in remote country districts where sea-fish, and the better inland varieties being unknown, anything will pass muster, in this line, as dainties.

The Roach is readily distinguished by his blood-red irides, and the ruddy tinge which borders his pectoral, ventral, and anal fins. His head is thick and obtuse at the snout, the labials coarse and fleshy. The eye large, and situated midway between the tip of the snout and the posterior margin of the gill-covers. The gill-covers are mode-

rately curved, forming an irregular semicircle. The pectoral fin has its origin immediately behind the edge of the suboperculum. The origin of the dorsal is midway between the snout and origin of the caudal fin, and the ventrals vertically under it. The caudal fin is powerful and lunated. The dorsal rays are ten in number, the pectoral sixteen, ventral nine, anal eleven, and caudal nineteen. This little fish is gregarious, swimming in shoals, and feeding on worms and herbs. It is admirable as a bait for Pike, and for the larger varieties of Pearch and River Bass, being, I think, preferred by them to any other fish, as the Parr is by the Sea Salmon, and the larger species of lake and sea Trout. The Chub and Dace are also good for the same purpose, but inferior to the Roach. As sporting fish it would be a loss of time to describe them at length. The American Chub never exceeds ten inches.

* Note to Revised Edition.—Since penning the above, I hear from some correspondents that in many of the Eastern waters they grow to a much larger size; my views are, however, those of Agassiz, DeKay, Smith, and Richardson.





THE NEW YORK SHINER.

Stilbe Chrysoleucas; Agassiz.—*Cyprinus Chrysoleucas*; Mitchil.

This beautiful little fish is common to almost every pond and stream throughout the temperate regions of North America, from the waters of New England to those of Lake Huron. It is found associating to a certain degree with the species last described, and still more commonly with the Sun-Fish, *Pomotis Vulgaris*, and the Yellow Pearch, *Perca Flavescens*, though it undoubtedly falls a victim to the voracious appetite of the latter fish, when it grows to a larger size. It loves gravelly shallows, on which it spawns, and is constantly to be seen sporting among the leaves of the large water lilies.

Like the species last named, it is an excellent bait both for Pearch and Pike, and is often taken on spinning tackle by great Trouts, whether brook or lacustrine.

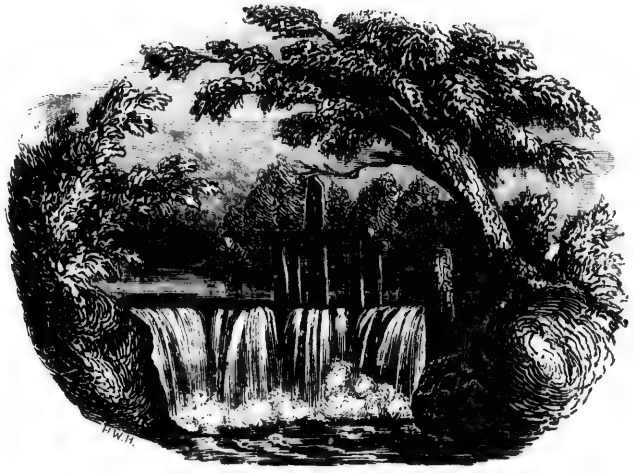
It belongs to that group of *Leucisci* which have the dorsal fin far back, and in this respect greatly resembles the subgenus *Abramis*, or Bream.

Its head is small, smooth, and depressed above. The mouth is small, and destitute of teeth. The eyes are large, with yellow irides. The body is very deep, being very nearly one-third of the length, excluding the caudal fin. The branchiostegal rays are three in num-

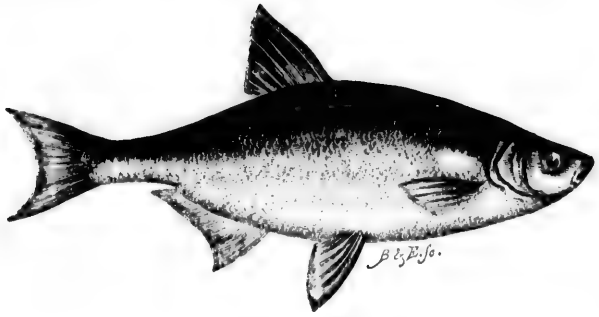
ber, the pectoral seventeen, ventral nine, dorsal nine, anal fourteen, and caudal nineteen.

The upper part of the head, back, and sides, dark glossy green; lower sides, and belly, silvery white, with golden reflections. Dorsal fin, brownish yellow; pectorals, reddish buff; ventrals, dull lake. anal and caudal, dull reddish brown, streaked with lake.

Of this group, there are several species, all abundant, and affording much sport to schoolboys and young ladies. To the angler, except as bait, they are little worth, and to describe one variety, as a type of the species, will be amply sufficient.



ABDOMINAL MALACOPTERYGII. CYPRINIDÆ.



AMERICAN BREAM.

Abramis Versicolor; Agassiz.

The Bream of America, of which there are several inferior species, like most others of this family which I have enumerated, never grows to any size, and is very little accounted by the angler in general, though in some of the western waters, where they bite freely, they are sometimes angled for with the small red worm, and are accounted a delicate pan-fish.

They are distinguished from the other *Cyprini*, by the great depth of their bodies, by having the dorsal set very far back, behind the extremity of the ventral, and by the great length of the dorsal fin.

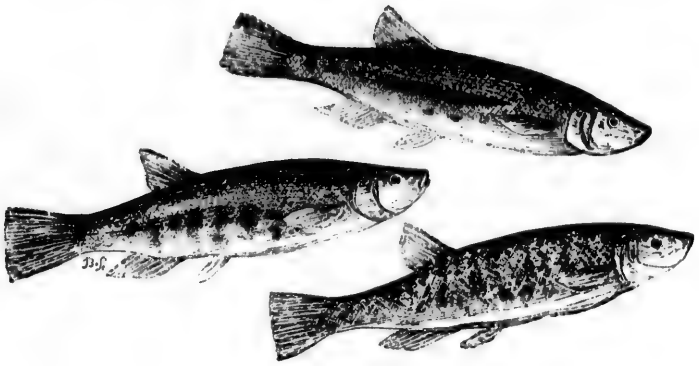
The tongue is smooth, as well as the jaws and palate, but the lower pharyngeal bones are set with large teeth.

Like the other *Cyprini*, the Breams are among the least carnivorous of fishes.

This is a beautiful species. The back is dark, of a hair-brown hue, varied with many colored changeable reflections; the sides golden yellow, and the belly silvery white; the dorsal and caudal fins brown; the others yellowish, tinged with red

The branchial rays are three in number, the dorsal fin-rays twelve, the pectorals twelve, the ventrals seven, the anal twenty-seven, and the caudal nineteen.

A little fish, closely resembling this in form, is described and figured in Dr. Richardson's Northern Zoology, on the authority of Lieut. Col. Smith, who took it at the confluence of the Richelieu and St. Lawrence. It is known to the Canadians as *la Quesche*. In form, it closely resembles this species; and in color, the last described; but it has one spiny ray in the dorsal, and one in the anal fin, and a toothed tongue, which would seem to divide it from the genus *Abramis;* while the size of the anal divides it from the true Carps. It has, moreover, small scales, and barbels.



MINNOWS.

Hydrargyra; Auctorum.

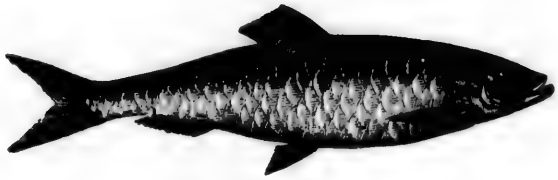
THE Minnow proper of Europe, *Cyprinus*, *Leuciscus*, *Phoxinus*, is unknown to the waters of North America, but as its equivalent, and analogous to it, we have innumerable species of the *Hydrargyra*, or American Minnow; which, in general appearance, habits and haunts, are very nearly assimilated to the European fish.

Its food consists of aquatic plants, small worms, and minute portions of any animal substances. It bites boldly and readily at small red worms, gentles, or the larvæ of any of the *Phryganea*, known as caddis-baits, stick-baits, and the like, on the least Limerick hooks, number twelve; and is constantly taken by boys with a worm alone tied to a fine string, which the little fish swallows so greedily that he is pulled out before he has time to disgorge it.

Under many local names this beautiful little *Cyprinus* is found in every swift-running stream with a gravelly bottom, and in the shallows of every pond or lakelet throughout the country. They are generally

known as Killy-fish, and are an excellent bait for fish of almost every kind that prey on other fish.

As live bait for Pike, Pearch or Catfish, they are not to be equalled; and in spinning or trolling, they are excellent for the noble Striped Bass, the Pike, the Salmon, the Lake Trout in all its varieties, and for the Brook Trout—especially those which are found in the tide-creeks, where they are less willing than in other waters to take the fly. A more particular description of so common and well-known a fish would take up space needlessly, which is more required for other parts of my subject; and the species are, I was almost about to say, innumerable. Three of the commoner varieties, and those most useful as bait, are represented on the preceding page.



THE HERRING.

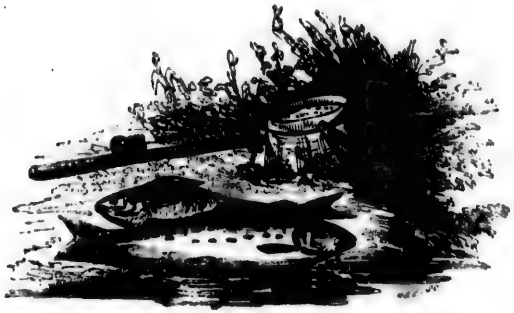
Clupea Harengus.

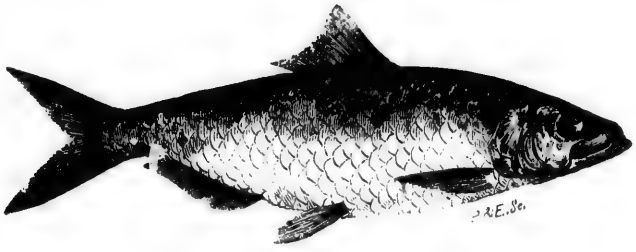
THE common Herring, which visits both continents, runs into the mouths of all the northern and north-eastern rivers of North America, and is not only greatly sought for as an article of food, but really affords very excellent sport to the angler. In spring, when he enters the estuaries in full condition, and full of spawn, he leaps freely at any gaudy-colored fly—whether of the peacock feather, or, what is yet better, a four-winged fly of the scarlet ibis and silver pheasant, on a scarlet chenil body, not unlike the fly used in Black Bass fishing, but of a smaller size. The best way to use it is with a single BB shot attached to the gut an inch or two above the fly, so as to troll with it, as it were, slightly sunken below the surface. I have taken them in this manner, off Fort Diamond at the Narrows, almost as fast as I could cast and draw in the fly.

The appearance of this fish is so well known that a very particular description is hardly necessary. The length of the head to the body is about as one to four, the depth to the length of the body as one to five. The upper part of the fish is a fine blue, with green and other reflections, when viewed in different lights; the lower part of the side and belly silvery white; the cheeks and gill-covers silvery. Dorsal and caudal fins dusky; the fins on the lower parts of the body almost

white. The lower jaw is much longer than the other, with five or six small teeth extending in a line backwards on each side from the anterior point; four rows of small teeth on the central upper surface of the tongue, and a few small teeth on the central surface of the upper jaw. Branchiostegous rays are eight in number, pectoral sixteen, ventral eight, anal sixteen, dorsal nineteen, and caudal eighteen. The scales are large. The caudal fin deeply forked.

Several other species of Herring are common to the waters of the United States, but this is the only one which is taken with the fly, or can be accounted as game to the sportsman.





THE SHAD.

Alosa Præstabilis; DeKay.

This delicious and well-known fish, which is by many persons esteemed the queen of all fishes on the table, has been, until very recently, regarded as one that could be taken only with the net, and therefore of no avail to the angler. It is, however, now clearly proved that, like the Herring, the American Shad will take a large gaudy fly freely, and being a strong, powerful and active fish, affords great play to the sportsman.

It is undoubtedly the fact that, until within the few last years, fishing in the United States, except of Trout, having been practised rather as a means of providing the table, than as a matter of sport, it has been taken for granted that many species of fish, which are easily captured by the sean, will not take the bait or the fly; and few species have been pursued as game except those which are not easily caught otherwise than with the hook. Fly-fishing, moreover, having been a few years ago confined to a very few individuals, and even now being comparatively limited, it was attempted only with those families which could hardly be otherwise captured. Now, however, *nous avous changè tout celà*, and opportunities for the practice of this delightful art are sought for so eagerly, that any person is regarded in some de-

gree as the sportsman's benefactor if he introduces to his notice a new species which will afford sport with the artificial fly.

It is, as I have observed, indisputably true, that on his entrance into fresh-water from the salt, for the purpose of spawning, the Shad will readily take a gaudy fly, the more readily the higher he runs up into the cold and highly aërated waters in the upper parts of our large rivers, where also they are taken in the greatest perfection, as for instance in the Delaware, so far up as Milford, in Pike county, Pennsylvania.

The New York Shad, *Alosa Præstabilis*, was, I believe, first distinguished specifically by Dr. DeKay of New York, having been previously confounded with the Allice Shad of Europe, *Alosa Communis*, of Cuvier, *Clupea Alosa*, Auctorum, to which it bears a very considerable resemblance, although I presume that the distinction can be fully made out.

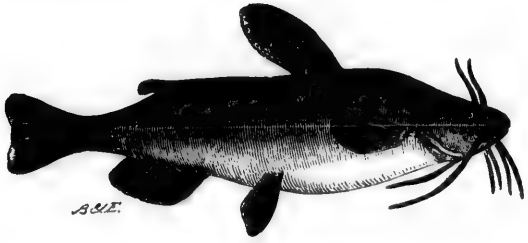
The body of this fish is deep and compressed, the thickness rather less than one-third of the length. The length of the head is to that of the whole fish as one to six; the depth to the length as one to four. The scales are very large; the tail long, slender, and deeply forked.

The dorsal fin-rays are nineteen, the pectoral fifteen, ventral nine, anal twenty-six, and caudal twenty. The greatest depth of the body is just before the ventral fin. The shad has no distinct lateral line, its abdominal edge is strongly serrated, especially behind the ventrals.

The top of the head and back are dusky blue, with brown and green reflections in particular points of view. There is a single dusky spot behind the operculum. The irides, sides of the head and body, are of a silvery white, with a tinge of copper-color. The dorsal and caudal fins are dusky, the pectoral, ventral, and anal fins, white.

The flesh of the Shad is perhaps the most delicate of any existing fish; and, though it lacks the lusciousness, as well as the glutinous fin of the Turbot, it is preferred to that fish by many judicious epicures, notwithstanding the drawback occasioned by its innumerable and sharply-pointed bones.

From personal experience and success, I can assure the fly-fisher that he will find much sport in fishing for the Shad during his upward run in the spring, with a powerful Trout-rod, a long line, and such flies as he will procure in perfection at Conroy's, in Fulton-street, New York



THE CAT-FISH.

Huron Pimelode. Silurus, Pimelodus, Cœnosus; Richardson

THIS singular and hideous family of fishes is distinguished from the others of the same order, by the skin being either naked or protected by large plates, but always destitute of true scales. The intermaxillaries are suspended under the ethmoid bone, and form the border of the upper jaw, while the labials are lengthened out into barbels, or are simply rudimental; it has, also, a second adipose dorsal fin. First rays of the dorsal and pectoral fin spinous.

This family contains twenty-five or thirty species peculiar to America, which are generally known as Cat-fish, Bull-heads, Bull-pouts, &c. They inhabit the larger lakes and rivers, especially, but are found in all the waters of North America.

The commonest and the largest species both belong to the subgenus *Pimelodus*, and are well known as Cat-fish; the ordinary kind measuring only a few inches in length, and never exceeding a few ounces weight; the largest reaching a hundred or even a hundred and fifty pounds, especially in the great northern lakes, and in the western rivers. The great Huron Pimelode, or, as it is often called, the Chan-

nel Cat-fish, which is the largest of the family, is thus described by Richardson:

"Profile oval, tapering into the tail. Head broadly oval, forming two-ninths of the total length. Orbits small, and nearer to the snout than to the gill-openings. Nostrils situate some distance before the eye. A slender barbel, half an inch long, springs from their posterior margin. Snout obtuse. Labials ending in a tapering barbel, which is an inch and a quarter long, and reaches to the gill-opening; there are also two slender barbels, one each side of the chin. Both jaws are armed with a brush-like band of short teeth. The palate and vomer are smooth. In this genus the suboperculum is wanting; the preoperculum is attached to the operculum by bone, and can be traced by its elevated ridge. The interoperculum cannot be traced through the skin. There are nine gill-rays. The gill-openings are rather narrow. The dorsal rays are—one spinous, seven soft; second dorsal, adipose. Pectorals, one spinous, eight soft; ventrals eight, anals twenty-four, caudals seventeen.

The skin is smooth, thick, adipose, and lubricated by a mucous secretion. The color is a dingy greenish brown above, and dirty white below. The flesh is very rich and gelatinous, and not dissimilar either in quality or flavor to that of the Eel. In some places it is esteemed a great delicacy. All the Cat-fish are greedy biters, and will take almost any animal substance as a bait. After being hooked, however, although they are powerful fish, and pull hard for a while, it is yet a dead lug entirely, unlike the lively and fierce resistance of the Trouts and Pearches; and they afford in truth very little real sport to the angler.

Seven species of this fish are quoted by M. Le Sueur, as belonging to Lakes Erie, Ontario, and their tributary waters, besides many other varieties in the southern and western waters, where it grows to a yet more enormous size.

There is, however, so little difference either in the appearance or habits of this filthy, mud-loving and hideous fish, that the description of one species must serve for all.

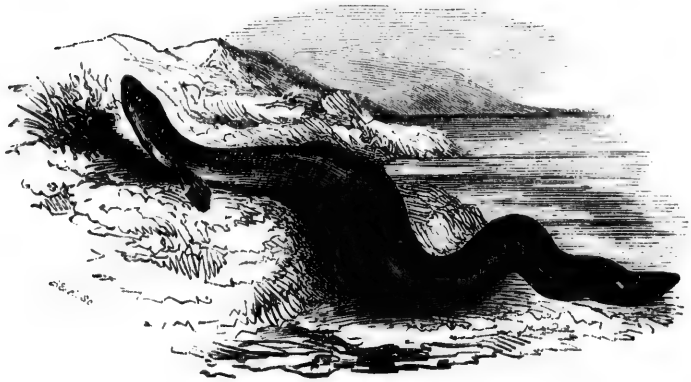
The cut at the head of this paper represents the great Cat-fish, or Huron Pimelode.

The *Silurus Glanis*, Sly Silurus, or Sheat-fish, is the largest fresh-

water fish of Europe, growing, it is said, to six feet in length, and attaining to three hundred weight.

Dr. Smith includes this species of *Silurus* in the fishes of Massachusetts, and Dr. Flint attributes it to the Ohio and Mississippi, both evidently confounding it with the various indigenous Pimelodes, which it greatly resembles. It differs from the American Pimelodes in having the anal fin extremely long, extending almost the whole distance from the extremity of the ventral to the origin of the caudal fin.

APODAL
MALACOPTERYGII. ANGUILLIDÆ.



THE EEL.

Anguilla; Auctorum.

ALTHOUGH I in no respect regard the Eel as worthy of the notice of the angler, a volume on fish and fishing would be incomplete, had it not some allusion to this singular fish, which is, moreover, very excellent on the table.

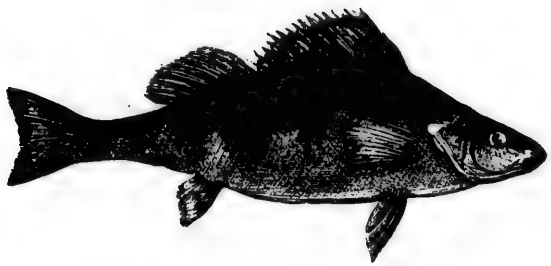
The family to which it belongs is of a different order from any which have been enumerated, that of the *apodal Malacopterygii*, or soft-finned fishes, destitute of ventrals. They have slender and elongated bodies, without apparent scales, these being deeply imbedded in mucous skin. Gill-covers they have none, the gill-openings are small, before, and rather below the origin of the pectoral fins. The dorsal fin extends above two-thirds, and the anal above one-half the length of the whole fish, both united at the end, and forming a tail. The lateral line exhibits a series of mucous orifices.

The general color is hair-brown, varying to glossy bluish green,

above, and coppery-yellow varying to silver-white below, according to the purity and brightness of the waters which they inhabit.

They may be taken with a hook and angle-worm, but it is a nasty, slimy business, and affords no sport to compensate the disagreeable nature of the labor. The Eel-spear, the set-line, or the Eel-pot, is the true mode of taking them, and their true place is not in the creel of the genuine angler, but on the board of the elaborate epicure, *en matelotte*, or *a la tartare*, according to individual preference.

With this fish, our list of the soft-rayed species is brought to a close, and I shall now proceed to the *Acanthopterygii*, or spiny-finned fishes, among which are several of our finest species, both of fresh and salt-water, both for sport in the water, and excellence on the table.



THE AMERICAN YELLOW PEARCH.

Perca Flavescens; Mitchil.

This is a very common fish, widely diffused, with small variation of size, shape, form and color, through all the inland fresh waters of the whole United States, ranging through all the lakes and rivers of the country from the eastern part of Maine to the waters of the Ohio, into which it has gained access through the Ohio Canal, and whence it will undoubtedly ere long make its way into the Mississippi. There are several subordinate varieties of this fish, which differ in size, color, and slightly also in the number of fin rays, in different waters, and these have been created into distinct species, under the titles of the Rough Yellow Pearch, *Perca Cerrato Granulata;* the Rough-headed Yellow Pearch, *Perca Granulata;* the Sharp-nosed Yellow Pearch, *Perca Acuta;* the Slender Yellow Pearch, *Perca Gracilis;* and the White Pearch, *Perca Pallida.* It does not, however, appear that these distinctions are sufficiently broad or permanent to justify this arrangement; and it is now generally held that there is but one species of true fresh-water Pearch in the United States, and that the forms which have been designated under the above titles are mere accidental varieties, similar to those which have been previously noticed of the common Trout. Originally the Yellow Pearch was a

northern fish, its range extending to about the fiftieth parallel, but it has lately, like several others of the same species, been much more widely diffused through artificial channels, as, for instance, the Black Bass, *Gristes Nigricans*, and the Rock Bass, *Centrarchus Æneus*, which have descended from the basin of the St. Lawrence, by the Erie and Whitehall canals, into the waters of the upper Hudson.

The Yellow Pearch is a bold biter, and a tolerably good fish on the table; it frequents the same waters with the Pickerel, from the assaults of which it is defended by the sharp spinous rays of its dorsal fin.

In color, its sides are yellow, varying in intensity from greenish to bright golden in different waters, and occasionally in tide waters to pale greenish white. Its back is banded with six or eight dark vertical bars. Its pectorals, ventrals and anal are golden orange—its dorsals and caudal greenish brown.

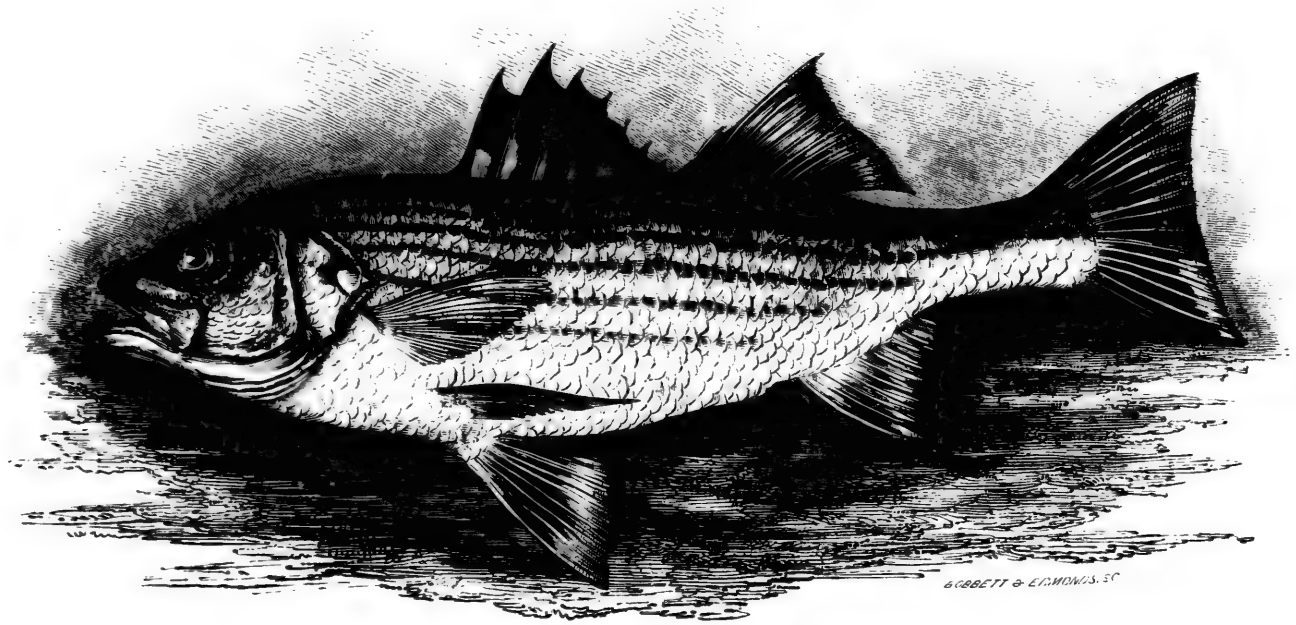
Its body is compressed, elongated, with a slightly gibbous dorsal outline. The scales are small, the head, above the eyes and between them, smooth, lateral line concurrent with the line of the back. Head sub-depressed, and in the larger and older fish the rostrum is produced, causing a hollow in the facial outline. The first dorsal commences above the base of the pectorals, the first ray much shorter than the second, the fourth, fifth and sixth rays are the longest, and the last the shortest—it has in all thirteen rays. The second dorsal has seventeen rays, the two first spinous. The pectorals have fifteen soft rays; the ventrals have one spinous and five soft rays; the anal, two spinous and eight soft; the caudal is forked, with rounded tips.

The mouth is of moderate size; the preoperculum strongly toothed, the operculum serrated beneath, with a spine on its posterior angle. The irides are golden yellow—the pupils black.

It varies in weight in different waters, from a few ounces to four or five pounds. It is a bold, hardy fish—is easily transported from one water to another, and appears to thrive equally well on all soils.

It is taken with the worm or small fish, used either as a live or dead bait, and affords very fair sport, pulling strongly on the line for a few minutes, but by no means requiring the same degree of skill as the Pearch to effect its capture. It is the favorite fish of rural anglers, where Pickerel do not abound, and is esteemed a great delicacy where sea-fish cannot be obtained.

FROM NATURE. ON WOOD BY H. W. HERBERT.



STRIPED BASS.

LABRAX LINEATUS. *Cuvier.*

FROM NATURE. ON WOOD BY H. W. HERBERT.

THE STRIPED SEA BASS.

Rock Fish; Bar-Fish; Richardson.—*Labrax Lineatus;* Cuvier.

This noble fish, which, after the Salmon family, is unquestionably the most sporting fish of this continent, has its geographical range from the Capes of the Delaware, in which river it is known as the Rock Fish, to the coasts of Massachusetts; unless, as I think almost certain, the Bar-Fish of Richardson, which is taken in the St. Lawrence, prove to be merely an accidental variety.

The Striped Bass is properly a sea fish, entering the rivers in the spring to spawn, at which time he runs as high up the courses as the depth of water will permit, and lies among the bushes where the channels are narrow. They run far up the Hudson—are taken at the foot of the Cohoes Falls of the Mohawk in great numbers, and ascend yet higher up the cold, clear waters of the Delaware.

In September and October they run along the coast in large schulls, entering the inlets, and being taken in great numbers between the outer bars and the beach by the seau. In the heaviest surfs of the Atlantic, on the outer ocean beaches, they are captured of great size with a bone or metal squid. They are a bold, ravenous and powerful fish, biting voraciously at almost every sort of bait, from soft crabs and clams, on a drop-line, to shiners or sparlings on trolling tackle, Shad-roe in rivers frequented by that fish in the spring of the year, and even the artificial fly of large size and gaudy colors, with which, at the end of a hundred yards of line, they afford great sport, being vigorous, fierce and active, nor succumbing until after a long and violent conflict with their captors.

In winter, when the weather becomes cold and stormy, they again enter the estuaries of rivers, and imbed themselves in the mud of the brackish bays and lagoons, which possess the advantage of being calm and undisturbed by the tempests which vex the open sea.

They attain to a very great size, even, I believe, to seventy or

eighty pounds' weight, though I have never myself seen one of above forty-three; the smaller sized fish, of seven or eight pounds, are, however, by far the most delicate, and I think those not exceeding fifteen pounds give the best sport to the angler.

In color, the Striped Bass is bluish brown above, silvery on the sides and beneath. Along each side are from seven to nine equidistant dark, parallel stripes, the upper series terminating at the base of the caudal, and the lower above the anal fin. These lines are occasionally indistinct, sometimes interrupted, and more rarely each alternately a continuous stripe and a row of abbreviated lines or dots; this appears to be the form which Dr. Richardson has designated as the Bar-Fish of the St. Lawrence.

The body is cylindrical and tapering. Head and body covered with large adhesive scales. Lateral line obvious, running through the fourth stripe, and nearly straight. Head bluntly pointed; eyes large; nostrils double; gill openings large; lower jaw the longest; teeth numerous on the maxillaries, palatine bone and tongue; operculum armed with two spines on its lower margin, the preoperculum finely dentated.

The first dorsal consists of nine spinous rays, of which the first and the last are shortest. A simple ray occurs between this and the second dorsal, which consists of twelve branched rays. The pectoral fins have sixteen rays; the ventrals one spinous and five soft rays; the anal three spinous and eleven soft; the caudal, which is broadly lunate in shape, has seventeen branded rays.

The pupils are black, the irides silvery.

Altogether it is one of the most beautiful, as well as the most excellent and sporting of American game fish, the flesh being very firm, white and well-flavored.

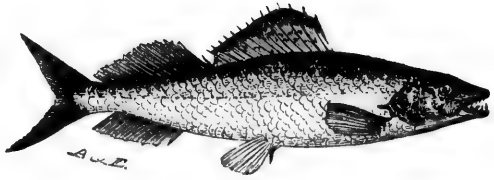
There are two other species of Bass, the *Labrax Rufus*, and *Labrax Pallidus*, or Ruddy, and little White Bass, which are better known, both to anglers and epicures, as the River Pearch of New York, and White Pearch. They are both taken in the brackish waters of tide rivers, and afford fair sport to the angler, as well as being a very delicate pan-fish

Dr. DeKay also enumerates another fish of this genus, as the small Black Bass, *Labrax Nigricans*, which he describes as being found in various ponds of Queens and Suffolk Counties, Long Island, rarely attaining to two pounds in weight, being esteemed very good eating, and rising freely to the fly.

I have never myself seen this fish, but have great doubts whether it is more than a casual variety of the Black Bass of the St. Lawrence, the *Centrarchus Fasciatus* of DeKay, the *Huro Nigricans* of Cuvier and Richardson, and more properly the *Gristes Nigricans* of Agassiz; for, although this is improperly distinguished into two fishes by Dr. DeKay, it is in fact but one I have never heard, it is true, of the existence of the St. Lawrence Bass in the waters of the State of New York south of Champlain, prior to the opening of the canals, but there is no doubt that, like the Pearch, it might easily be transported from one to another locality by artificial means.

There is yet another variety, the White Lake Bass, *Labrax Albidus*, which is taken readily with the hook in Lake Erie, and known at Buffalo, where it is much esteemed as an article of food, as the White Bass.

None of these are, however, sufficiently important to merit more particular notice.



THE YELLOW PIKE PEARCH.

AMERICAN SANDRE.

Lucioperca Americana; Cuvier.

THE OHIO PIKE, GLASS-EYE, YELLOW PIKE, OHIO SALMON.

This bold and voracious fish I have never seen, though it is abundant from the western part of the State of New York to the waters of the Ohio, the great lakes and the rivers of the fur countries, up to the 58th parallel of latitude. It affords great sport to the angler, being readily taken with the hook, with almost any live or dead fish bait, though it is said to prefer the common fresh water Cray-fish, *Astacus Bartoni*, according to Dr. DeKay, whose account of this fish I have taken the liberty of borrowing from his Fauna of New York:

"The best time for fishing is in the dusk of the evening, with a great length of line, keeping the bait in gentle motion. The foot of rapids or beneath milldams appears to be its favorite haunts. In the heat of summer it seeks the deepest parts of lakes, or in streams in the coolest places under weeds or grass. It is esteemed one of the

most valuable fishes of the western waters, in which it greatly abounds, and sells readily for a high price. It spawns in Lake Huron in April or May, and has been taken of the length of thirty inches.

"Its color is yellowish olive above the lateral line; lighter on the sides; silvery beneath. Head and gill-covers mottled with green, brownish and white. Chin pale flesh-color. Pupil dark and vitreous, irides mottled with black and yellowish. Membrane of the spinous dorsal fin transparent, with a few dark dashes; the upper part of the membrane tipped with black. Soft dorsal fin light yellowish, spotted with brown in irregular longitudinal bars. Ventral fins transparent yellowish; pectoral fins yellowish olive, with brownish bars. Anal fin transparent yellowish, with a broad whitish margin; caudal fin with irregular dusky bars.

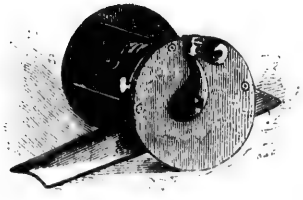
"The body is elongated, cylindrical and tapering. Scales of moderate size, lateral line straight from the upper edge of the gill-covers to the tail. Preoperculum serrated with a series of distant spines. Opercle with one slender flat terrinal spine, beyond which is a pointed membrane. Branchial rays, seven. Mouth wide extensible, the lower jaws received into the upper. A series of acute recurved teeth in both jaws, and on the vomer and palatines. Two very long and conspicuous teeth, resembling canines, in front of each jaw; those of the lower received into cavities above. Teeth on the vomer minute. Tongue smooth, pointed, free. The first dorsal fin is composed of thirteen or fourteen long slender spinous rays; the second dorsal has one short, simple, subspinous ray, and twenty-one soft rays; the pectorals have fourteen soft rays; the ventrals one stout spine and five branched rays; the anal one spine and fourteen rays; the caudal is deeply furcate, and has seventeen distinct, beside many accessory rays."

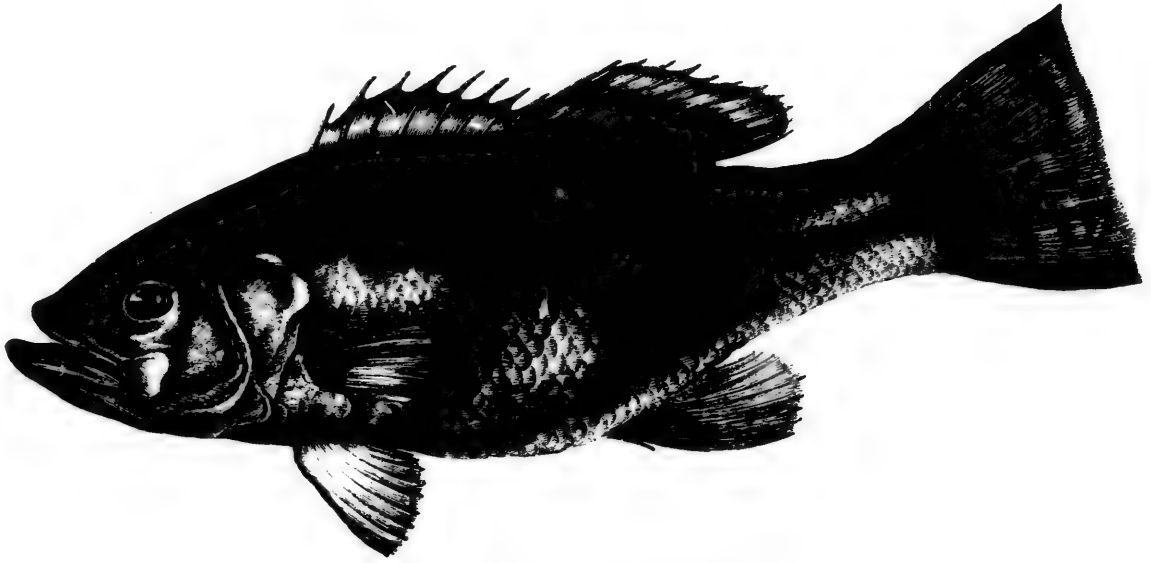
This fish is a true Pearch, though its form, elongated mouth, and fiercely predatory habits suggest the idea of a Pike, whence Dr. DeKay has given it the appellation of Pike Pearch, which is a translation of its classical name, in preference to the name Sandre, which belongs to the Canadian fish of the same species, and to the analogous European fishes.

THE GRAY PIKE PEARCH, *Lucioperca Grisea*, would seem to be a permanent variety of the above, if not a distinct species; it differs from it in size, never exceeding ten or twelve inches, in color and several other important particulars. It is found in the same waters with the preceding species, and is equally prized as an article of food.

RICHARDSON'S PIKE PEARCH, the Canadian Sandre, *Lucioperca Canadensis*, is another small distinct species, found in the river St. Lawrence. Its principal characteristic difference lies in the fact that the operculum has five acute spines on the lower margin. In color it is dark olive green above, and whitish beneath, with a few pale-yellow spots on the sides below the lateral line. It does not exceed fourteen inches in length. It is, like the others of its species, esteemed an excellent fish on the table, and, being a free biter and hard puller, affords good sport to the angler. It is not, however, of so great importance that I care to enter into a more minute description.

This is the fish concerning which a controversy has been going on between "Dinks" and some Western fishermen, who insist on calling it a Pike, as distinct from Pickerel. It is *a true* Pearch, and has no connexion with any of the Pike family.





BLACK BASS, ST. LAWRENCE.

GRISTES NIGRICANS. *Agassiz*

FROM NATURE. ON WOOD BY H.W. HERBERT.

THE BLACK BASS

OF THE ST. LAWRENCE.

Huro Nigricans; Cuvier.—*Centrarchus Fasciatus*; DeKay.—*Gristes Nigricans*; Agassiz.

This is one of the finest of the American fresh-water fishes; it is surpassed by none in boldness of biting, in fierce and violent resistance when hooked, and by a very few only in excellence upon the board.

Peculiar originally to the basin of the St. Lawrence, in which it abounds from the Falls of Niagara downward, if not through its whole course, it has made its way into the waters of the upper Hudson, through the canals. It is said by Dr. DeKay to be found generally in the small lakes of the State of New York, but I conclude that this must be limited to those which communicate with the great lakes or the St. Lawrence. It is taken abundantly in Lake Champlain, but it is in the swift glancing waters of the St. Lawrence, among the exquisite scenery of the Thousand Islands, that it affords the greatest sport to the angler.

It bites ravenously at a small fish or spinning-tackle, or at the deadly and murderous spoon, an instrument so certainly destructive that the use of it is properly discouraged by all true anglers as poaching and unsportsmanlike.

The finest sport can be had, however, with a long light Salmon-line, troble-twisted gut, to defy its numerous and exceedingly acute teeth, and a large fly, with a body of scarlet chenil and four wings, two of the silver pheasant and two of the scarlet ibis. As the Black Bass attains to the weight of six or eight pounds, and is excelled in vigor, speed and agility only by the Brook Trout, the Salmon Trout and the True Salmon, the sport which he affords when thus hooked can be very readily imagined; nor can he be brought to the basket by anything short of the best tackle, and the most delicate and masterly manipulation.

In color, this fish is of a dusky bluish black, sometimes with bronze

reflections, the under parts bluish white, the cheeks and gill-covers nacrous of a bluish color.

The body is compressed. Back arched and gibbous. Profile descending obliquely to the rostrum, which is moderately prolonged. Scales large, truncated. Scales on the operculum large; a single series on the suboperculum, much smaller on the preoperculum, ascending high up on the membrane of the soft dorsal and caudal fins. Eyes large; nostrils double. Operculum pointed, with a loose membrane. The lower jaw is somewhat longest. The jaws are smooth and scaleless. Both jaws are armed with a broad patch of minute conic acute reserved teeth. An oblong patch of rasp-like teeth on the vomer, and a band of the same kind on the palatines. Branchial arches minutely toothed. Pharyngeal teeth in rounded patches.

The dorsal fin is composed of nine stout spines; the second dorsal of one spine and fourteen soft rays. The pectorals have eighteen soft rays, the ventrals one spine and five soft rays, the anals three spines, and twelve soft rays, and the caudal sixteen soft rays.

*It is somewhat doubtful to me whether the fish known in the waters of Lake Erie and those generally above the Falls, as the Oswego Bass, is not distinct from this fish, though it is also occasionally called Black Bass. There is very evidently some confusion about the matter, as I am well assured that another fish of the same family, the *Corvina Osculа*, is at times confounded with it, and called by the same name, though in truth it but slightly resembles it. Another fish of the same family is the Growler.

* Note to Revised Edition.—During a tour, this autumn, through the great lakes, I had abundant opportunities of learning the habits of this fish, which swarms in all the Canadian lakes, though not found north of them. It is taken in Seneca, Crooked, and Cayuga Lakes, and in the first is of rare excellence. I lean to the opinion that the differences between this and the Oswego Bass arise merely from difference of condition and feeding-grounds. This Bass has, I understand, been introduced into Lake Mahopach, Dutchess Co., N. Y.

THE GROWLER.

Gristes Salmoeides; Auctorum.

THE WHITE SALMON; Smith's History of Virginia.—THE TROUT; Carolina Provincialism.

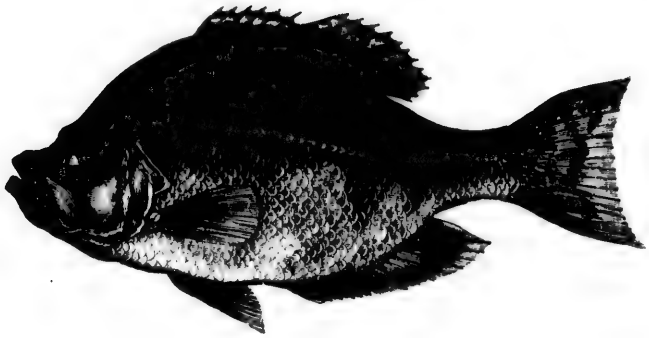
THIS fish, in general form, closely corresponds with that last described. It has the same gibbous back, with the lateral line following the dorsal curve, and the same protruded lower jaw. Its teeth are set minutely in broad bands or patches. The operculum has two moderate points.

Its color is deep greenish brown, with a bluish black spot on the point of the operculum. When young it has twenty-five or thirty longitudinal brownish bands, which become effaced by age.

The first dorsal fin has ten spines, the second thirteen or fourteen soft rays; the pectorals sixteen soft rays; the ventrals one spine and five soft rays; the anal three spines and eleven or twelve soft rays; the caudal fin, which is slightly lunate, has seventeen soft rays.

There may, perhaps, be two distinct varieties of this fish. It has been taken in the waters of Western New York, in the Wabash in Indiana, and abundantly in Carolina, where it attains to the length of two feet, and is considered an excellent fish, passing, as well as another fish of the same family, the Carolina Weak-fish, *Otolithus Carolinensis*, under the misnomer of Trout. I am inclined to believe that this fish is also known as the Welchman in the inland waters of North Carolina. It is also the Salmon of the Susquehannah.

Before passing on to the next species I will observe that I consider the proper classical name of the Black Bass of the St. Lawrence decidedly to be *Gristes*—the genus *Huro* not having been by any means satisfactorily defined. For that of *Centrarchus* is distinguished by having many spinous rays to the ventral fin, while the genus *Gristes* has but three, *Perca* two, and *Lucioperca* only one—this affording a broad and clear distinction, and being that on which Agassiz founds the subgenus in question.



THE ROCK BASS.

FRESH WATER BASS.

Centrarchus Æneus; Cuvier.

This is another delicate and game fish, which, originally peculiar to the basin of the St. Lawrence, has made its way through the canals into the upper waters of the Hudson and the anastomosing streams. It is abundant in the great lakes, and Lake Champlain.

It, like the Black Bass, is a bold biter, taking a small fish dead or alive very freely, but preferring to all other baits the Cray-fish, *Astacus Bartoni*.

The general color of this fish is a dark coppery bronze above, with green reflections, the head above dark green, gill-covers metallic green, with a dark spot on the posterior margin of the operculum. The sides golden copper, with several rows of oblong dark spots below the lateral line. The fins bluish green.

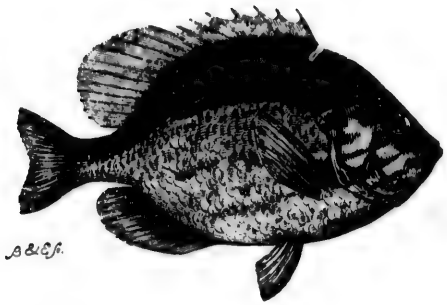
The body is compressed, short and broad. The dorsal outline gibbous; the lateral line following the curve of the back. Head large,

with a concave outline. Gill-covers scaly; the operculum with rudiments of a double angle on the posterior margin; lower jaw somewhat the longest. Teeth small, conical, recurved, on the maxillaries, intermaxillaries, vomer, palatines and pharyngeals.

The dorsal fin has eleven spinous and twelve soft rays; the pectorals fourteen rays; the ventrals one weak spine and five branched rays; the anal, six spinous and eleven soft rays; the caudal with rounded tips has seventeen rays.

The Rock Bass is excellent eating, and gives good sport to the angler, though it never attains to the size of the Black Bass, rarely exceeding a pound or a pound and a half, and consequently being far less difficult to take.

This fish, as well as the Black Bass and others of the family, might be transplanted with great ease into inland waters; and as they are hardy, and defended from all enemies by their sharp and spiny fins, would be sure to thrive, and would prove delicious additions to our lacustrine species of fishes.



THE COMMON POND FISH.

FRESH WATER SUN FISH.

Pomotis Vulgaris.—Cuvier.

This beautiful little fish has gained its provincial name from the extreme brilliancy of its colors when disporting itself in the sunshine The numerous spots on its body have procured for it the absurd name of *Pumpkin-seed* in many States, and in Massachusetts it is known as *Bream.* It is valueless as an article of food, and equally so as a bait fish, its acute spines deterring any fish from seizing it. It is, however, a constant object of pursuit to boy and lady anglers.

It has very many varieties, and a wide geographical range, being found from Lake Huron, through all the Eastern States, and along the Atlantic coast so far south as Carolina.

Its color is greenish olive above, with irregular points of red and broader yellow or reddish brown spots disposed in very irregular lines Ranges of brighter spots on the bluish operculum, and on the hinder prolongation of the operculum a black spot with a bright scarlet margin.

Its body is much compressed, very broad, oval. Scales large and even. Forehead sloping to the snout. Lateral line concurrent with

the back. Eyes large, circular near the facial outline. Nostrils double; mouth small, with very minute thick-set teeth on the maxillaries, palatines and vomer.

Its dorsal fin has ten spinous and twelve soft rays, pectorals twelve soft, ventrals one spine and five soft rays, anal three spinous and five soft, caudal seventeen soft rays.

There is another well-defined species, the Black-eared Pond-fish, *Pomotis Appendix*, which is distinguished by a large lobe-like black prolongation of the upper posterior angle of the operculum.

THE LAKE SHEEP'S-HEAD.

Corvina Oscula; Cuvier.

This is a very common fish in Lake Erie, and also below the Falls of Niagara, where it is readily taken with the hook, though it is in very small repute for its edible qualities, being commonly reported to be dry, lean and tasteless. It is in fact very rarely eaten.

Its color is bluish gray on the back, darker on the abdomen and the snout. Abdomen and chin grayish white.

In shape it considerably resembles the preceding genera, *Gristes* and *Centrarchus*, having a gibbous dorsal outline, and arched profile, the lateral line being also, as in these, concurrent with the curve of the back. The eyes are large, round and prominent, situated close to the facial outline. The teeth in the jaws are small, conic, and sharp, but the palate and pharyngeals are paved with large rounded solid teeth, well adapted for crushing its hard and shelly prey, such as the fresh-water clams and muscles, cyclas and paludina which constitute its principal subsistence.

The dorsal fin has nine spinous rays, the second dorsal one spinous and twenty-eight soft rays, the pectorals nineteen soft rays, the ventrals one spinous and five soft, the anal two spinous and eight soft, the caudal, seventeen rays. Its air bladder is very large and simple.

This fish, if I am not greatly in error, is very frequently confounded on the lakes in the vicinity of Buffalo with the *Gristes Nigricans*, under the name of Oswego Bass,* and in fact, though of a different family, *Scienidæ*, does bear something of general resemblance to that species. It is also found in many of the small inland lakes throughout the country.

* It is more probable, however, that there is no true distinction between the Black and Oswego Bass, save in the difference of condition

THE MALASHEGANAY.

Corvina Richardsonii; Cuvier.

This, like the species last named, is an inhabitant of the upper lakes, though it is not found below Lake Erie. In Lake Huron it is known as the *Sheep's-head*, and in the vicinity of Buffalo as the *Black Sheep's-head*.

It affords very good sport to the angler, and unlike its congener last described, is highly prized as one of the most delicious of the lake fishes.

Its color is greenish gray, banded with dusky or blackish bars over the back, its sides are silvery, its belly yellowish. In form it closely resembles the *Corvina Oscula*, but its forehead descends in a more vertical angle to the mouth. The under jaw is somewhat the longer. The mouth is cleft back as far as to the middle of the eye, which is large and round. The teeth are very numerous and very small. The operculum has two lobes behind.

The first dorsal fin has nine spinous rays, the second one spine and eighteen soft rays, the pectorals have fifteen soft rays, the ventrals one spine and seven soft rays, the anal one spine and seven soft rays, the caudal seventeen soft branched rays.

There is yet another species of this family, the *Corvina Grisea*, known familiarly as the White Pearch of the Ohio, which is found in the waters of that noble river, but it is of little importance either to the angler or the epicure, and merits not a more particular description.

With this fish ends the list of those fresh-water fishes of the United States and British Provinces, which by the most liberal courtesy may be called game or sporting fishes.

Hence I proceed to the shoal-water sea fishes of the same division, *Acanthopterygii*, and thence, and lastly, to the deep-sea fish of the order *Sub-brachial Malacopterygii*.

SHOAL-WATER FISHES.

Having now come to the conclusion of that, by far the most important, portion of my subject which relates to the fresh-water fishes, including those anadromous or migratory species which, although they make their abode during a part of the year at least in salt water, are taken in sporting style in rivers and estuaries only, I shall proceed to devote a few pages only to these sea fish; all of the division *Acanthopterygii*, and all of five families, *Percidæ*, *Scienidæ*, *Sparidæ*, *Scombridæ*, and *Labridæ*, which are taken in shoal waters at the mouths of large rivers, in bays and estuaries, and which not only afford much sport to the angler at particular seasons of the year, but furnish a delicious article of food.

These are the Sea Bass, or Black Sea Bass, *Centropristes Nigricans.*

The Lafayette, *Leiostomus Obliquus.*

The Weak-Fish, *Otolithus Regalis.*

The King-Fish, *Umbrina Nebulosa.*

The Silvery Corvina, *Corvina Argyroleuca.*

The Branded Corvina, *Corvina Ocellata.*

The Big Drum, *Pogonias Chromis.*

The Sheep's-head, *Sargus Ovis.*

The Porgee, *Pagrus Argyrops.*

The Blue-Fish, *Temnodon Saltator.*

The Tautog—Black-Fish—*Tautoga Americana.*

THE SEA BASS.

BLACK SEA BASS.

Centropristes Nigricans; Cuvier.

THIS is an excellent fish, and a very general favorite on the table. It is with us a summer fish of passage, in the Northern States I mean, appearing on the coasts of New York during the months of May, June and July, in which it is frequent in the markets, and readily taken with the baited hook.

Its geographical range is very wide, extending from the coasts of Florida to Cape Cod, on the shores of Massachusetts; abundant in the vicinity of Martha's Vineyard, it is rare in Boston bay. Properly a southern species, though it visits the waters of the Eastern States in summer, it invariably returns to the eastward in autumn.

With the wonted stupid perversity of their order, the fishermen of our coasts have confounded it, by means of absurd misnomers, with two entirely different species, the BLUE FISH, *Temnodon Saltator*, and the BLACK FISH or TAUTOG, *Tautoga Americana*, calling it commonly by both these appellations.

The color of the Sea Bass is a general blue black, sometimes more or less slightly bronzed, the edges of every scale are much darker than the prevailing color, which gives the character of a black network on a bluish ground to the whole surface of the fish. The fins, excepting the pectoral, are pale blue; the dorsal and anal more or less distinctly spotted with a darker shade of the same color.

The body is oblong and compressed; the scales are of an oblong form, covering the opercula and extending high up on the dorsal; the preoperculum is distinctly toothed along its entire margin, the operculum has a large spine on it, and another above; the teeth are like velvet pile on all the bones, those on the outer edges of the jaws the largest.

The dorsal fin has ten low spinous, and eleven much more elevated soft rays, the pectorals have eighteen soft rays, the ventrals one spine and five soft rays, the anal three spines and seven soft rays, the caudal trilobed, consisting of eighteen soft rays.

This fine fish is known by a great number of provincial titles; among others Dr. DeKay mentions the trivial names of *Black Harry* and *Hanahills*.

It is a bold and free biter, and is one of the principal objects of pursuit by those who join in steamboat excursions to what are called the sea banks, off the port of New York, in the process of which they are often taken in considerable numbers.

THE LAFAYETTE

SEA CHUB.

Leiostomus Obliquus; Lacepede.

THIS is a beautiful and exquisitely-flavored little fish, which properly belongs to the southern waters, being very common on the coasts of Florida, where it is much prized both as a sporting fish and as a delicacy.

New York is probably its northern limit, and in the New York waters it is a rare visitant, though it appears at times in extraordinary abundance.

One of the seasons of its most remarkable frequency happening to be simultaneous with the visit of Lafayette to America, it thus obtained its common name by general consent, it never having been observed previous to that date, and so taken for a new fish, though it had in truth been defined long before by Dr. Mitchil, who designated it *Mugil Obliquus*.

Its color is grayish white, with fifteen or sixteen darker gray bars, more or less, pointing obliquely forward, those nearer the tail more vertical; pupils black, irides yellow, fins pale yellow, the dorsal and anal finely spotted with black. There is a round spot of dark brown on the lateral line above the pectorals.

The first dorsal fin has nine spinous rays, and is triangular in shape, its fourth and fifth rays being the largest; the second dorsal has one spine and thirty soft rays; the pectorals twenty, the ventrals fifteen soft rays; the anal has two spines and twelve soft rays; the caudal has nineteen branched and articulated rays.

There is a variety of this fish, *Leiostomus Xanthurus*, peculiar to South Carolina, which has no spots or bands, but has all the fins, and more especially the caudal, yellow.

THE WEAK-FISH.

WHEAT FISH; Squeteaque, Checouts.—*Otolithus Regalis;* Cuvier.

THE trivial name of this fine fish has never been very distinctly explained, some ascribing the title "Weak" to the delicacy of the mouth, which when hooked often tears away from the barb; others to the briefness of its resistance after being struck, though at first it pulls strongly.

Yet a third explanation is, that Weak is a corruption from "Wheat," because it comes into season when the wheat is ripe; this, however, is not the fact, as it is an early spring fish, though taken through the summer months abundantly in the waters of New York; probably both names, Wheat and Weak, are really corruptions from the Narragansett appellation by which it was first known to the English settlers, *Squeteaque*.

Its geographical range is very wide, extending from New Orleans and the mouth of the Mississippi, where it is styled "Trout," to the estuary and Gulf of the St. Lawrence. It has also, it is said, been taken at Martinique.

It is less common in the New York waters than formerly, being savagely hunted by its deadly enemy, the Blue Fish, *Temnodon Saltator*, which has lamentably thinned its numbers. Still it exists in sufficient numbers to give very exciting sport to the shoal salt-water angler, and when quite fresh out of the water is a very exquisite fish, its flavor greatly resembling that of the Trout, whence probably its southern misnomer. When it has been taken three or four hours it becomes flaccid, insipid, and in fact utterly worthless.

Its color is bluish gray above, with irregular lines of transverse spots on the back and sides; the head is greenish blue, the irides are yellow, the gill-covers and belly silvery and nacrous, the chin Salmon-colored, dorsal and caudal fins brown, pectorals pale brownish yellow, ventrals and anal orange.

The body is long, slender and compressed; head convex above the eyes, the scales moderate-sized, oval, covering the head and gill-covers; the lateral line is slightly curved; the eyes large; maxillaries, intermaxillaries, and pharyngeals minutely toothed.

The first dorsal fin is triangular, and longer than it is high, of eight weak spines; between this and the second dorsal is a single weak spine. The second dorsal has twenty-eight soft rays, the pectorals have eighteen soft rays, the ventrals one spine and five soft rays, the anal thirteen, and the caudal seventeen rays.

Of this fish there are two distinct varieties, the *Otolithus Carolinensis*, also misnamed Trout, which is bluer on the back than the Common Weak-Fish, and is spotted rather than striated; and the *Otolithus Drummondi*, a smaller species found at New Orleans.

The Common Weak-Fish is taken with the hook and reel of all sizes, from a few ounces up to seven or eight pounds, and it is positively asserted even up to thirty, but I have never seen a specimen approaching to such dimensions.

THE KING-FISH.

BERMUDA WHITING.

Umbrina Nebulosa; Agassiz.—*Umbrina Alburnus*

This admirable fish, which was formerly very abundant in the waters of New York and its vicinity, very few ever wandering so far as to Boston, is becoming daily less frequent. On the coasts of Carolina and Florida, where it is still taken in vast numbers, it is known absurdly as the Whiting, a fish to which it bears no resemblance.

It is perhaps the gamest of all the shoal salt-water fishes, and the angler regards the King-Fish in his basket much as the sportsman looks upon the Woodcock in his bag—as worth a dozen of the more easily captured and less worthy fry.

His colors on the back and side are dark bluish gray, with lustrous and silvery reflections, and bright many-colored nacrous gleams flitting over him as he dies. His irides are yellow; his dorsals, caudal, and pectorals are dusky olive brown, the former the deepest; the ventrals and anals pale yellow. There are several dark oblique bands on the back, broken toward the tail, and a dark horizontal stripe, more or less distinct, from the pectorals to the tail.

The body is long, cylindrical, and slender; the scales round, the lateral line parallel to the back; the snout is long but blunt; the operculum has two strong flat spines; the preoperculum is serrated behind; the branchiostegous rays are seven; the teeth of the upper jaw are long, sharp and rare, in the lower even and crowded.

First dorsal fin is triangular, with ten spinous rays, the second dorsal has one spinous and twenty-five soft rays, the pectorals thirteen soft rays, the ventrals one spine and five soft rays, the caudal fin has seventeen rays, and has its upper lobe acute, but its lower rounded.

There is said to be a permanent variety of this fish, *Umbrina Coroides*, peculiar to South Carolina, which has two spines to the anal fin, and is marked with nine dark vertical bands on the back.

THE SILVERY CORVINA.

CORVINA ARGYROLEUCA.

SILVERY PEARCH. *Bodianus Argyroleucos;* Mitchil.

THIS fish, which greatly resembles the Pearch both in shape and habits, is well known to the fishermen of New York as the *Silvery Pearch.* It is properly a native of the Caribbean Sea and Gulf of Mexico, but ranges during the summer so far north as the waters of New York.

It is a free biter, and a moderately good fish.

It is of a lustrous silvery white on the upper parts of the body, and opaque white below. Its dorsals, pectorals and caudal are pale yellow; its ventrals and anals orange yellow.

Its body is compressed, its dorsal outline arched and gibbous, its lateral line concurrent with the back; eyes large, mouth deeply cut, teeth small and disposed in bands; the preoperculum has two small spines, and a serrated margin; the operculum terminates in two flat spines.

The first dorsal fin has eleven spines, the second dorsal two spines and twenty-two soft rays, the pectorals seventeen soft rays, the ventrals one spine and five soft rays, the anal two spines and nine soft rays, the caudal is slightly rounded, and has seventeen soft rays.

THE BRANDED CORVINA.

Corvina Ocellata; Cuvier.

This is a beautiful species, very rare at the north, but is abundant to the southward. It is as excellent as it is handsome, and my southern readers will recognise it as the *Poisson Rouge*, or Red-fish, of New Orleans, and as the Sea Bass or Red Bass of Charleston. Like the rest of its family it is a bold biter and a vigorous fish, and is considered superlative on the table.

In color it is blue above, lighter below, with head, cheeks and shoulders of a deep golden yellow, with ruddy metallic reflections. Its dorsal fin is dark green. Pectorals, ventrals and anal dull red. At the base of the tail it has one and sometimes two dark brown confluent spots. To these its name of Branded has been ascribed by Dr. Mitchil, as if the marks resembled the brand left by a heated iron.

The body of this Corvina is more cylindrical, less compressed and shallower than in any others of its family. The snout is blunt but prominent. Lateral line concurrent with the dorsal outline. The teeth in one band in both jaws. The preoperculum is serrated or toothed along the whole margin; the operculum terminates posteriorly in two blunt spines.

The first dorsal fin has ten spines; the second one spine and twenty-six soft rays; the pectorals have seventeen soft rays; the ventrals one spine and five soft rays; the anal two spines and eight soft rays; and the caudal, which is nearly even, but slightly hollowed out in the centre, has seventeen branched rays.

It is found in the southern seas from eight inches to three feet in length, and in those waters is one of the most favorite objects of pursuit to the salt-water angler.

THE BIG DRUM.

Pogonias Chromis; Cuvier.

AND

THE BANDED DRUM.

Pogonias Fasciatus; Lacepede.

Both of these fish are so constantly and commonly taken by the bait fisher in shoal salt water that it would hardly be proper to omit all mention of them in a work of this nature, although except the great size and difficulty of landing the former, and the rapid biting of the latter variety—if they be indeed distinct species, which I think Dr. DeKay has satisfactorily established them to be—they have little or nothing to recommend them.

The geographical range of both these fishes is from Florida to New York, their northern and southern limits being identical.

They have both deep compressed bodies, large eyes, lateral lines parallel to the dorsal outline, numerous teeth in card-like bands on the jaws, and the pharyngeals furnished with large hard grinders.

They have both double dorsals, the former with nine, the latter with ten spines in the first—both with one spine and twenty-two soft rays in the second. Pectorals, respectively, eighteen and twenty; ventrals of both, one spine and five soft rays; anals, respectively, two spines, seven soft rays, and two spines, five soft rays; caudals seventeen, and fifteen branched rays.

The large fish is of a brownish bronze color, rather lighter below, with a strongly marked spot behind the pectorals; scales silvery at the outer edges.

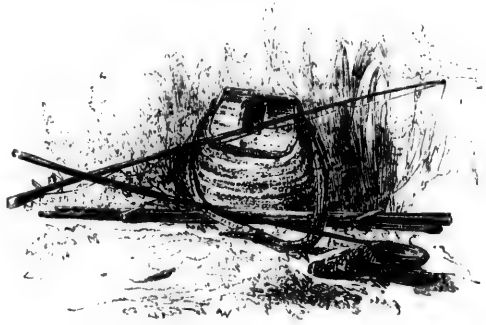
The smaller fish is nearly of the same color, chocolate brown, or bronze intermixed with silver, but marked with four dusky bands, one coming down to the pectorals, the second crossing the first dorsal, and

the last two crossing the second dorsal. The pectoral fins are yellowish, the others dusky brown.

The smaller fish has been by some persons supposed to be the young of the larger species, but this is, in my opinion, satisfactorily controverted by Dr. DeKay, who has seen them in September six inches long with all the characteristics of the adult.

It is known by various popular names, as the *Grunter*, *Young Drum*, and *Young Sheeps-head*, but is a fish of very small estimation.

The larger species is rarely taken of less than three feet in length, and fifteen or eighteen inches in depth; they weigh from twenty to eighty pounds, and although the large fish are very coarse, the young are considered by some persons delicate eating. They rarely go north of New York, but very rarely visit the coasts of Massachusetts.



THE SHEEP'S-HEAD.

Sargus Ovis; Auctorum.

This fine and delicate fish must on no account be confounded with the fresh-water *Corvinæ*, two of which pass by the same synonyme in the vernacular, and are peculiar to the great lakes. This is, on the contrary, a purely salt-water species, never ascending rivers, although it enters all the shallow bays on the coast, so far as Cape Cod. It is a southern fish in its natural state, although during the heat of the summer it wanders to the northward, where it is taken along the shores from June to October. Its southern limit is the Mississippi, and the coasts of Florida and the Carolinas are its breeding-grounds.

As a delicacy, it holds "the same rank with American gastronomers," says Dr. DeKay, "that the Turbot holds in Europe. I have frequently eaten of both, under equally favorable circumstances, that is to say, within an hour after being taken out of the water, and can assert that the Sheep's-Head is the more delicate and savory fish. The Turbot, I may here state—though I have heard the contrary frequently asserted—does not occur on the shores of America."

I have quoted the above remarks for two reasons, first because I desire to register my assertion as against Dr. DeKay's, although such things are, after all, merely matters of opinion, that the Sheep's-Head, though a delicious fish, is not more delicate—*savory* neither of them are—than the Turbot, and that it is immeasurably inferior to it in lacking what constitutes the Turbot's chief excellence, the admirable gelatinous fins, which have been famous the world over from the time of Domitian and Heliogabalus, arch epicures of old, to the palmy days of Ude and Carenne.

Secondly, I beg leave to state positively, that although *the* Turbot of Europe does not exist on the shores of America, *a* Turbot, and a very admirable fish too, as far superior to the Halibut as one fish can well be to another, does exist, and is constantly taken on the shores of Mas-

sachusetts, although, like many other excellent species, it is strangely undervalued.

But to return to the Sheep's-Head: it is a timid and wary fish, very difficult to hook, and when hooked a fierce and bold battler, exceeding difficult to land, and making a more desperate resistance than infinitely larger species. It is considered the greatest achievement of the salt-water fisherman to master this king of the seas.

It is occasionally taken up to seventeen pounds, though seven or eight pounds may be considered the average of large fish, but like many, I might say most fishes, the smaller and middle-sized run may be generally set down as the most choice.

The Sheep's-Head has a deep compressed body, a head sloping abruptly to the snout, and equally so to the chin and throat. Scales large and oblong, smaller on the gill-covers and throat; the lateral line is parallel to the dorsal outline; the preoperculum is broadly rounded, the operculum emarginate. In front of each jaw it has several large quadrilateral cutting teeth, and inside of these, both above and below, as well as on the pharyngeals, are many series of large-paved grinders.

Its dorsal fin has twelve spinous and eleven soft rays, its pectorals fifteen soft, ventrals one spinous and five soft, its anal three spinous and ten soft, and its caudal seventeen soft rays.

In color it is of a dull silver, with coppery gleams on the back, with five slightly arched bands of a darker color crossing the back and tail. The irides are brown, the pupils black, girdled with a golden ring.

The fins are all deep brown or blackish; the head and forehead black, with golden green reflections; the chin marked with smutty patches, from some fancied resemblance of which to a Moorland sheep's face, its trivial name is derived.

NOTE TO REVISED EDITION.—Since writing the above, I learn from the correspondent of a paper, writing hostilely, that the Sheep's-Head ranges even south of the Mississippi. I used the best authority I could command, not having visited that country. I now gladly avail myself of his matter, though "I detest his manner."

THE BIG PORGEE.

Pagrus Argyrops; Cuvier.

This is a good and a handsome fish, and would be more valued if less common. It is a bold and free biter, and affords great sport to the salt-water angler, being, with the Sea Bass, the principal object of pursuit to those who affect steamboat excursions to the fishing banks. Its geographical range is from Charleston southward, to Cape Cod on the north, beyond which it has been found impossible to naturalize them.

The color of the Porgee is a deep brownish black on the head and back, with green and golden reflections, especially about the neck and sides, which are silvery, with brazen gleams. A black spot marks the upper corner of the gill-cover crossing the lateral line, and there is another of the same kind at the base of the pectoral fin. The dorsal, anal and caudal fins are brown, the ventrals bluish, the pectorals light yellow. The body of this fish is much compressed, with a gibbous outline, nearly half as deep as it is broad; the face arched; the scales are large, and the lateral line corresponds with the curve of the back.

The jaws are largely furnished, as well as the pharyngeals, with alternating series of acute and paved teeth. The dorsal fin is compound, with one stout and twelve feeble spines, and twelve soft rays; the pectorals are unusually long, with sixteen soft rays; the ventrals have one spine and five soft, the anal three spines and eleven soft, and the caudal seventeen soft rays.

There are two smaller fish of the same family, one well known to all fishermen, especially on the Long Island shores, as the Sand Porgee, *Sargus Arenosus;* and another far less common, described by Cuvier and others as the Rhomboidal Porgee, *Sargus Rhomboides*, which, though very similar to the Big Porgee, are clearly distinct.

THE BLUE-FISH.

HORSE MACKEREL, GREEN-FISH, IN VIRGINIA; SKIPJACK, IN CAROLINA; SNAPPING MACKEREL.

Temnodon Saltator; Cuvier.

A BOLD, fierce, and well-known fish this, greatly sought after, and affording fine sport to the fisherman, and right-royally good to eat when quite fresh out of the water, split in two down the back, nailed upon a shingle, and roasted before a quick fire.

It is a singularly erratic fish, sometimes swarming on the coasts, and again almost entirely disappearing. It occasionally runs far up rivers, and was taken in the Hudson, so high up as the Highlands, in great quantities in the year 1841. It appears to have been entirely unknown on the coasts of New York before the year 1810, since which it has been, on the whole, gradually on the increase, while in like proportion its victims, the Weak-Fish and King-Fish, appear to be dying out.

The Blue Fish is said occasionally to reach the weight of thirty-five pounds, but the average run is from three to eight. They generally frequent the coasts of New York from May until late in the autumn. Their geographical range is very wide, from Brazil to Massachusetts on the coasts of America, from New Holland to Madagascar, and from Amboyna to Egypt.

The young fish abound in the mouths of our rivers from four to six inches in length, and even then they will take the bait with avidity.

The ordinary mode of catching this fine fish is with what is technically termed a squid, or piece of bright bone or metal, hurled out from the stern of a sailing boat, going with what is known as a "mackerel breeze" in a sea-way, and drawn rapidly home by hand.

There are many worse kinds of sport than this; the swift motion of the vessel, the dashing spray, and the rapid biting of the fish, combining to create a highly pleasurable excitement.

The color of this fish is a light bluish gray, with deeper tints on the back, and greenish reflections on the sides, becoming silvery on the belly. The pectorals, dorsal and caudal fins greenish brown, the ventrals and anal bluish white.

The body is oblong, cylindrical, compressed and slender, the facial outline gently sloping, the scales, which cover the whole body, the head, gill-covers, and much of the fins are of moderate size and oblong oval form.

The lower jaw is longest, both maxillaries are well armed with sharp lancet-formed teeth; the palatines, vomer and base of tongue banded with card-like patches of teeth. The operculum terminates in two indistinct flat points.

The first dorsal fin is composed of seven weak spinous rays, the second of one short and twenty-five longer flexible rays. The pectorals have seventeen soft, the ventrals one spine and five soft, the anals one spine and twenty-seven soft, and the caudal nineteen flexible rays.

Of the same family with the above are the well-known Spring Mackerel, *Scomber Vernalis*, of Mitchil, and Fall Mackerel, *Scomber Grex*, of the same author, as also the Spanish Mackerel, *Scomber Colias*, all of which species are excellent eating, and give good sport in the bays and inlets. They are, however, so common that they are rarely pursued for the sport, or taken except as an article of food and commerce. I therefore pass them without farther notice than this mere cursory mention

THE TAUTOG.

The Black-Fish of New York.—*Tautoga Americana*; DeKay.

This, like all the fishes last described, is rather a general favorite among both sportsmen and epicures, though I confess my own opinion to be that he is generally overrated in both capacities. As a game fish he is a dead, loggy, heavy puller on the hook, offering little resistance beyond the *vis inertiæ* and dead weight, and on the table his excellence depends mainly on the cook.

The color of the Black-Fish is indicated by his name, but varies considerably from deep dull black to glossy blue black with metallic reflections, and occasionally to dusky brown.

His body is elongated and compressed, the outlines of the back arched forward of the dorsal to the snout, straight posteriorly. The lateral line concurrent with the back. The eyes are rather small, the scales small, extending over the gill-covers, which are very large and rounded. The lips are very thick and fleshy, the teeth stout. The branchiostegous rays are five in number.

The dorsal fin has seventeen low spinous rays, and ten soft rays, the pectorals seventeen soft, the ventrals one spinous, five soft, the anal three spinous and eight soft, the caudal fourteen soft branched rays.

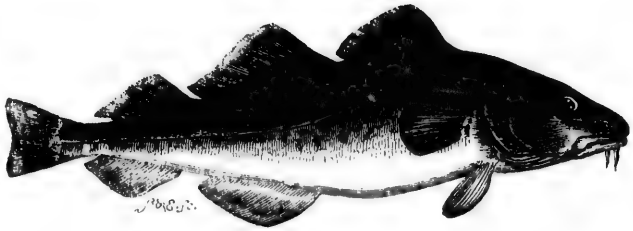
The Tautog ranges only from the capes of the Chesapeake to Massachusetts Bay. He is readily taken with the hook baited with crabs, clams, or other small shell-fish, from April until late in the autumn, especially in the vicinity of rocks, reefs, hulls of sunken wrecks, or old deserted docks, where he finds food in abundance. It is well to bait the ground largely for several days in advance of fishing for him.*

* Note to Revised Edition.—I have recently learned that this fish, as well as the Providence Whiting, is becoming common in Charleston, having, it is believed, escaped from the car of a fishing-boat, and bred there.

DEEP-SEA FISHING.

I HARDLY hold myself justified in enumerating the Cod, Haddock, Whiting, Halibut and Flounder among game fishes, but as it is probable that some of my readers do regard them as such, and pursue them for the pleasure of the capture, independent of profit, I shall proceed to describe the first three briefly, and shall devote a few pages in another portion of this work to a consideration of the modes and methods of their capture.

The huge Halibut, *Hippoglossus Vulgaris*, and the Flounder, *Pleuronectes Dentatus*, I shall content myself with naming, as I cannot bring myself to regard them as fit for any but culinary purposes. In like manner the Hake, the Cusk, the Pollock, and many others of the Cod family, I shall pass in silence as objects only of casual pursuit. except to the professional fisherman, who plies his daily toil to earn his daily bread.



THE COD.

Morrhua Vulgaris.

This is the common Cod of Newfoundland, well-known as an article of food the wide world over. There is an American variety, Morrhua Americana, which is slightly though permanently distinct.

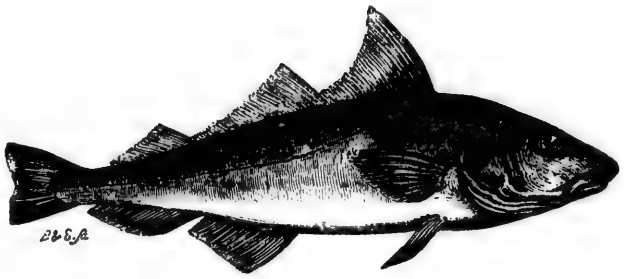
The fishes of this class are distinguished from the other soft-rayed fishes by having the ventrals situate nearly vertical under the pectorals, and having two or three dorsal and anal fins.

The color of this well-known species, which attains to a vast weight, sometimes seventy or eighty pounds, varies much in individuals. It is generally greenish brown, fading into ash-color when the fish is dead, with many reddish yellow spots. The belly silvery opaque white, the fins pale green, the lateral line dead white.

The body is long and cylindrical, the head sloping in an arched line, the eyes large, the scales small and adhesive. It has a cirrus or barbel at the extremity of the lower jaw. It has four rows of teeth on the upper, and one on the lower jaw.

It has three dorsal fins, respectively of fifteen, twenty-two, and nineteen rays; pectorals nineteen rays; ventrals six rays. Two anal fins respectively of twenty-two and nineteen rays; caudal forty rays.

It is a bold and voracious fish, ranging from New York northwardly along all the coasts of America.



THE AMERICAN HADDOCK.

Morrhua Æglefinis; Cuvier.

The distinctive coloring of this fish is blackish brown above, and silvery gray below the lateral line, which is jet black. The back and sides are varied by purplish and golden gleams; there is a large dark vertical patch posterior to the pectorals, crossing the lateral line.

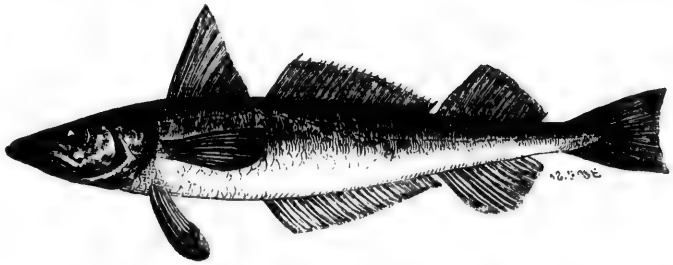
The fins are dusky blue.

The body of the Haddock is stout, anteriorly, and tapering backward. The head large and arched. The eyes are large. The lower jaw is the shortest; the teeth small, in a single row on each jaw; a single small barbel on the chin.

It has three dorsals, the first and third triangular, the second longest, respectively of fifteen, twenty-two and twenty rays. The pectorals have twenty-one, the ventrals sixteen, the two anals respectively twenty-five and twenty-one, and the caudal thirty-four rays.

The range of the Haddock is similar to that of the Cod; it is very abundant, and is about equal in estimation as an article of food with its congeners.

SUBBRACHIAL MALACOPTERYGII. GADIDÆ.



THE AMERICAN WHITING.

Merlangus Americanus.

This is, comparatively speaking, a rare and little-known fish, that which is commonly called *Whiting*, being in reality a Hake *Merlucius* It ranges only from Massachusetts northward.

It is easily distinguished by its long, tapering, cylindrical body, and its high, triangular, wing-like dorsals.

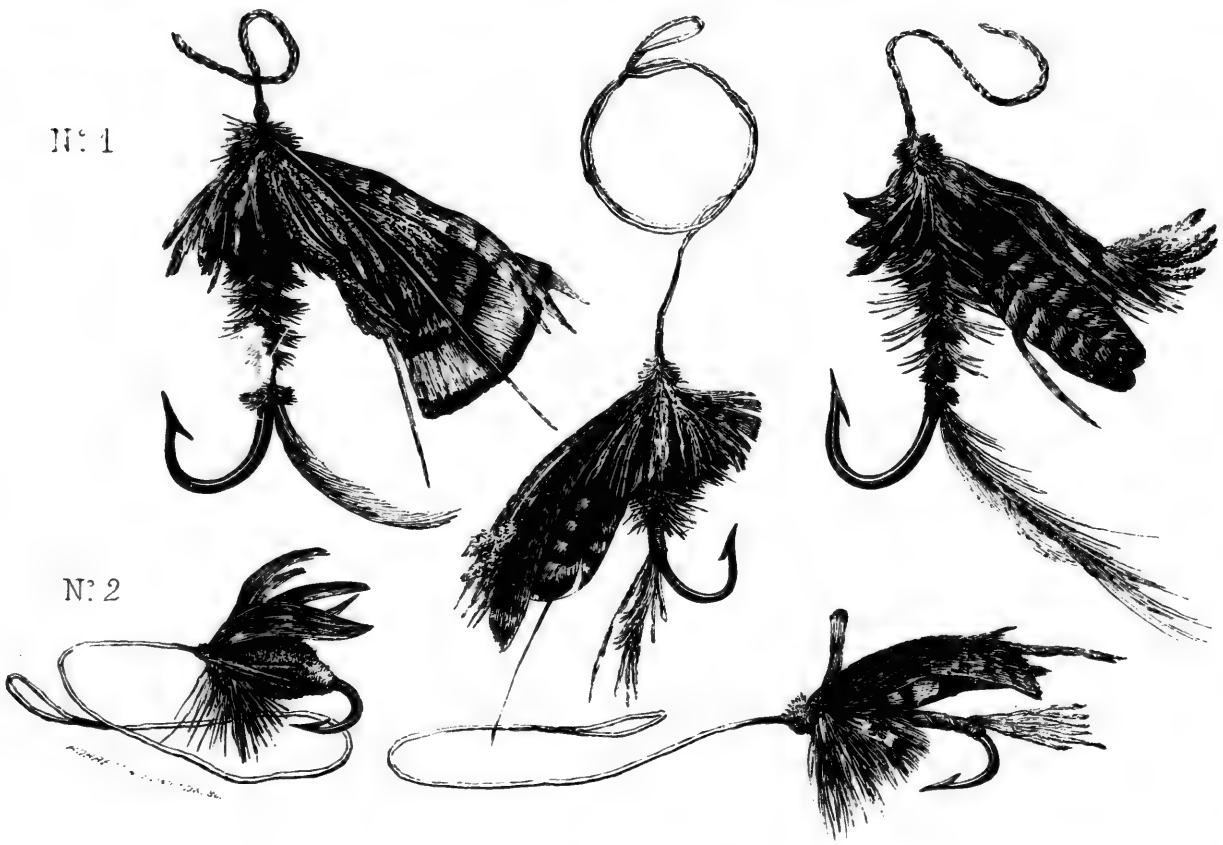
Its color is, above the lateral line, a bright nacrous bluish gray, and below a silvery white, with fins nearly of the same color.

The head of the Whiting is acutely prolonged; the eyes large and prominent; the gill-covers rounded; the teeth sharp and small.

The three dorsals have respectively thirteen, twenty and twenty rays; the pectorals nineteen, the ventrals six, the anals respectively twenty-four and twenty-one, and the caudal thirty-two.

The Whiting is a delicate fish. It is taken in the same manner and in the same waters with the Cod and Haddock, and, like them, has little or no game habits. The chief reason for inserting him in this work is, that his existence in American waters has been doubted and denied.

* Note to Revised Edition.—I have just learned from Mr. King, of Charleston, S. C., that this fish has lately been found in their waters, having, it is thought, escaped from an Eastern fishing-boat and become naturalized.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SALMON FISHING.

Of all the piscatory sports, this is the first and finest; and although it cannot now be pursued by the American angler except at the expense of some not inconsiderable time and trouble, still there is no land on earth in which it exists in such perfection as in this.

Time was, when every river eastward of the Capes of the Delaware swarmed with this noble fish, but, year after year, like the red Indian, they have passed farther and farther from the sphere of the encroaching white man's boasted civilization, and perhaps will also ere long be lost from the natural world of this era.

The Kennebec is now the western limit of the Salmon's range, and in that bright and limpid river he is yearly waxing less and less frequent

In the Penobscot, even to this day, he abounds; but for some singular and inexplicable reason, whether it be from the sawdusty turbidness of its lower waters, or from some especial habit of the fish, he is rarely or never known to take the bait or the fly, within very many miles of the mouth of that grand and impetuous stream.

Far up the northern and northwestern branches of the river it is speared constantly by the Penobscot Indians; but the white residents of that wild region, lumbermen for the most part, and sparse agricultural settlers, are guiltless of the art of fly-fishing—the only method, by-the-way, except the use of roe-bait, whereof more anon, by which much success can be expected or obtained.

To the sportsman, that great track of grandly-timbered and superbly-watered wilderness, which yet lies virgin almost and unbroken, from within a few leagues of the ocean to the great St. Lawrence, and from the Upper Kennebec to the Aroostook and St. John's, is yet well nigh *terra incognita*.

Yet well would it repay the fisherman or the hunter, to pack his traps in the smallest compass, and set forth with rifle, shot-gun, and

long Salmon-rod, via Augusta, Norridgewock, and the magnificent gorges of the Kennebec, for that land of the Moose, the Deer, the Trout, and the lordly Salmon, there to encamp for days or weeks, as his taste for excitement and his manly hardihood should dictate, floating by day in the birch-bark canoe over the bright transparent waters, sleeping by night on the fragrant and elastic shoots of the green hemlock, winning his food from the waters and the wilds by his own skill and daring, and earning the appetite whereby to enjoy it, by the toil which is to him a pleasure.

Such in fact is at present the only mode by which the angler can enjoy truly fine Salmon fishing, unless indeed he be a man of such liberally endowed leisure that he can fit his own yacht, and visiting the estuaries of those Salmon-freighted rivers, which, from the St. John's, round all the eastern and northeastern shores of New Brunswick, Nova Scotia, and Prince Edward's Island, to the vast mouth of the St. Lawrence, and up that splendid river and its great northern tributaries, the Mingan and the Saguenay, so far almost as the heights of Cape Diamond, offer the largest temptations to the adventurous angler.

Within a few years, indeed, the rivers close around Quebec, the Montmorenci, the Chaudiere, and the Jacques Cartier, abounded with Salmon; and a drive of a few hours in the morning from the Plains of Abraham, set the fisherman on waters where he could confidently count on filling his creel, even to overflowing, before night-fall; but latterly these streams have failed almost entirely, and a sail of many miles down the St. Lawrence to the mouth of the Saguenay or the lordship of Mingan, has now become necessary to ensure good sport.

In the upper province of Canada, although Salmon run up the river into Lake Ontario, and frequent many of the streams falling into it from the northern shore, as the Credit and others, they are very rarely fished for or taken with the fly, and it is said confidently that in the lake itself they will not take the fly under any circumstances.

Within my own recollection, Salmon were wont to run up the Oswego, and so find their way into all the lesser lakes of the State of New York; but the dams on the river, erected, I believe, in order to the construction of the canal, have completely shut them out from these waters. I may here observe that it is very greatly to be deplored

that, as is compelled by law in the Scottish and Irish Salmon rivers, a small aperture is not left in the rivers and dams, if they be above twelve feet in height, by which the fish may ascend to the cool and gravelly head-waters, in which they deposit their spawn.

Such an aperture or run-way, which need not be of more than two or three feet square, would not occasion any material waste of water in rivers of the vast volume and rapidity which are characteristic of all the American Salmon rivers, and, therefore, would detract nothing from the utility of the works, while, by suffering this most valuable fish to ascend the course, and so to propagate its species, it would ensure to the inhabitants of the inland shores a delicious variety of food, and create anew an important article of commerce.

It is singular that the Salmon of the lakes are never known to enter the Niagara river, although they are constantly taken at its mouth. They might ascend it some sixteen or seventeen miles, to the foot of the Falls, but I believe it to be a fact that none have ever been taken within the stream.

The cause of this is probably to be found in the great depth of the Niagara river, in its abrupt and wall-like shores, and in the total absence of gravel beds, or pebbly shoals of any kind, on which they can deposit their ova.

Again, I am not aware that Salmon are ever taken in the Black river, the Rackett river, or any other of the fine streams, all abounding with the finest Brook Trout, which make their way from the romantic region of the Adirondach lakes and highlands, to the northward, into the basin of the St. Lawrence.

Everywhere to the northward of the great Canadian river, to the extreme arctic regions, the Salmon is found in vast numbers, and, together with the White-Fish, or Attihawmeg, the delicious Arctic Grayling, Back's Charr, and the Common Trout, afford their principal subsistence to the Esquimaux, and to the adventurous fur-traders, whose posts are dotted down, hundreds of leagues apart, throughout those inhospitable countries.

Again, throughout the whole of that huge territory lately won at the sword's point, by the Saxon energy of young America, from the degenerate children of old Spain, throughout the British possessions, and even in those far northern shores which the Russian holds upon

this western continent, the estuaries and courses of those waters which pour into the Pacific, can boast not only the true Salmon, but many fine, distinct varieties. Many years will not probably elapse, taking into consideration the incessant stream of immigration which is almost overflowing Northern California, and remembering the restless, enterprising energy of the Anglo-American race, before railroads, even to the Pacific, across the western prairies, and through the gorges of the Rocky Mountains, will open this new world to the adventurous angler, and the dwellers of the Atlantic cities will make their trips to the Salmon rivers of the Pacific with less trouble, and in less time, than it took their sturdy Dutch forefathers to visit Albany, now reached with ease in a few hours.

For the present, however, it is needless to discourse of those western waters, since time must pass before any species of game will be pursued for sport on the shores of the Pacific, or killed except to afford subsistence to a population occupied wholly by the greedy race for riches. To the fisherman, therefore, the Eastern States and the north-eastern British provinces afford the only accessible Salmon fishing; and I should strongly urge it upon those who are enthusiastic about this fine sport, not to waste time even in the Kennebec or the Penobscot, but to pack up their traps at any time between May and September, and set forth at once for the city of St. John, in New Brunswick.

This town, which might be styled not inaptly the paradise of American fly-fishers, may be reached with ease in a few days via Boston, whence, if I am not mistaken, a stout and well-found steamer, the Admiral, takes her departure every Wednesday for New Brunswick. In St. John every requisite for the prosecution of the sport can be obtained, every information concerning the vast waters, and every facility for the procurement of guides, boats and the like will be gladly furnished, and every thing that hospitality can effect will be lavishly offered to the gentle angler.

I venture here to mention the name of an enthusiastic and thorough fisherman, Mr. Perley, Her Majesty's emigration officer in the city of St. John, as one certain to do whatever in his power lies to forward the views and promote the pleasure of any who shall visit his part of the world, led by the love of the gentle science; and I take the same

opportunity of thanking him for the very valuable information he has afforded me concerning the fisheries and fishing of the province, and of bespeaking his friendship and attention for any of my readers who shall be induced by the perusal of these pages to wet a line in the rapids of the St. John, the Obscache, the Chemenpeek, or the Richibucto.

Before proceeding to describe the more technical portions of Salmon fishing, and the implements necessary for the prosecution of the sport, I shall take the liberty of quoting from myself a chapter of a novelette now in course of publication in Graham's excellent magazine, entitled Jasper St. Aubyn. I do this not egotistically, nor altogether to save time and trouble, but rather because it contains as correct an account of the mode to be pursued in casting for the Salmon, hooking, playing and killing him in an English river, as I am capable of writing; and because the variety of the narrative style may possibly prove a relief to the reader, after the drier routine of more didactic writing.

It is scarcely, perhaps, necessary to add that the mode of fishing for the Salmon in England and America are identical, the tackle and implements the same, and the same flies the most killing in all waters, of which singular fact, and other matters connected with which, I shall say more hereafter. Nor, I presume, need I apologise to my reader for the slight anachronism which has attributed to an ideal personage supposed to live in the age of the Second James all the modern improvements and advantages possessed by the anglers of the present day, and all the skill and science which were certainly not to be found at that time in any Salmon-fisher, not excepting even good quaint Father Izaak, whose maxims on Salmon-fishing, and indeed on fly-fishing in general, savor far more of antiquity than of utility.

"It was as fair a morning of July as ever dawned in the blue summer sky; the sun as yet had risen but a little way above the waves of fresh green foliage which formed the horizon of the woodland scenery surrounding Widecomb Manor; and his heat, which promised ere mid-day to become excessive, was tempered now by the exhalations of the copious night-dews, and by the cool breath of the western breeze,

which came down through the leafy gorges, in long, soft swells from the open moorlands.

"All nature was alive and joyous; the air was vocal with the piping melody of the blackbirds and thrushes, caroling in every brake and bosky dingle; the smooth, green lawn before the windows of the old Hall was peopled with whole tribes of fat, lazy hares, limping about among the dewy herbage, fearless, as it would seem, of man's aggression; and to complete the picture, above a score of splendid peacocks were strutting to and fro on the paved terraces, or perched upon the carved stone balustrades, displaying their gorgeous plumage to the early sunshine.

"The shadowy mists of the first morning twilight had not been dispersed from the lower regions, and were suspended still in the middle air in broad fleecy masses, though melting rapidly away in the increasing warmth and brightness of the day.

"And still a faint blue line hovered over the bed of the long rocky gorge, which divided the chase from the open country, floating about it like the steam of a seething caldron, and rising here and there into tall smoke-like columns, probably where some steeper cataract of the mountain-stream sent its foam skyward.

"So early, indeed, was the hour, that had my tale been recited of these degenerate days, there would have been no gentle eyes awake to look upon the loveliness of new-awakened nature.

"In the good days of old, however, when daylight was still deemed to be the fitting time for labor and for pastime, and night the appointed time for natural and healthful sleep, the dawn was wont to brighten beheld by other eyes than those of clowns and milkmaids, and the gay songs of the matutinal birds were listened to by ears that could appreciate their untaught melodies.

"And now, just as the stable clock was striking four, the great oaken door of the old Hall was thrown open with a vigorous swing that made it rattle on its hinges, and Jasper St. Aubyn came bounding out into the fresh morning air, with a foot as elastic as that of the mountain roe, singing a snatch of some quaint old ballad.

"He was dressed simply in a close-fitting jacket and tight hose of dark-green cloth, without any lace or embroidery, light boots of untanned leather, and a broad-leafed hat, with a single eagle's feather

thrust carelessly through the band. He wore neither cloak nor sword, though it was a period at which gentlemen rarely went abroad without these, their distinctive attributes; but in the broad black belt which girt his rounded waist he carried a stout wood-knife with a buckhorn hilt; and over his shoulder there swung from a leathern thong a large wicker fishing-basket.

"Nothing, indeed, could be simpler or less indicative of any particular rank or station in society than young St. Aubyn's garb, yet it would have been a very dull and unobservant eye which should take him for aught less than a high-born and high-bred gentleman.

"His fine intellectual face, his bearing erect before heaven, the graceful ease of his every motion, as he hurried down the flagged steps of the terrace, and planted his light foot on the dewy greensward, all betokened gentle birth and gentle associations.

"But he thought nothing of himself, nor cared for his advantages, acquired or natural. The long and heavy salmon-rod which he carried in his right hand, in three pieces as yet unconnected, did not more clearly indicate his purpose than the quick marking glance which he cast toward the half-veiled sun and hazy sky, scanning the signs of the weather.

"'It will do, it will do,' he said to himself, thinking as it were aloud, 'for three or four hours at least; the sun will not shake off those vapors before eight o'clock at the earliest, and if he do come out then hot and strong, I do not know but the water is dark enough after the late rains to serve my turn a while longer. It will blow up, too, I think, from the westward, and there will be a brisk curl on the pools. But come, I must be moving, if I would reach Darringford to breakfast.'

"And as he spoke he strode out rapidly across the park toward the deep chasm of the stream, crushing a thousand aromatic perfumes from the dewy wild-flowers with his heedless foot, and thinking little of the beauties of nature, as he hastened to the scene of his loved exercise.

"It was not long, accordingly, before he reached the brink of the steep rocky bank above the stream, which he proposed to fish that morning, and paused to select the best place for descending to the water's edge.

"It was, indeed, a striking and romantic scene as ever met the eye of painter or of poet. On the farther side of the gorge, scarcely a hun-

dred yards distant, the dark limestone rocks rose sheer and precipitous from the very brink of the stream, rifted and broken into angular blocks and tall columnar masses, from the clefts of which, wherever they could find soil enough to support their scanty growth, a few stunted oaks shot out almost horizontally with their gnarled arms and dark-green foliage, and here and there the silvery bark and quivering tresses of the birch relieved the monotony of color by their gay brightness. Above, the cliffs were crowned with the beautiful purple heather, now in its very glow of summer bloom, about which were buzzing myriads of wild bees, sipping their nectar from its cups of amethyst.

"The hither side, though rough and steep and broken, was not in the place where Jasper stood precipitous; indeed it seemed as if at some distant period a sort of landslip had occurred, by which the summit of the rocky wall had been broken into massive fragments, and hurled down in an inclined plane into the bed of the stream, on which it had encroached with its shattered blocks and rounded boulders.

"Time, however, had covered all this abrupt and broken slope with a beautiful growth of oak and hazel coppice, among which, only at distant intervals, could the dun weather-beaten flanks of the great stones be discovered.

"At the base of this descent, a hundred and fifty feet perhaps below the stand of the young sportsman, flowed the dark arrowy stream—a wild and perilous water. As clear as crystal, yet as dark as the brown cairn-gorm, it came pouring down among the broken rocks with a rapidity and force which showed what must be its fury when swollen by a storm among the mountains, here breaking into wreaths of rippling foam where some unseen ledge chafed its current, there roaring and surging white as December's snow among the great round-headed rocks, and there again wheeling in sullen eddies, dark and deceitful, round and round some deep rock-rimmed basin.

"Here and there, indeed, it spread out into wide, shallow, rippling rapids, filling the whole bottom of the ravine from side to side, but more generally it did not occupy above a fourth part of the space below, leaving sometimes on this margin, sometimes on that, broad pebbly banks, or slaty ledges, affording an easy footing and a clear path to the angler in its troubled waters.

"After a rapid glance over the well-known scene, Jasper plunged

into the coppice, and following a faint track worn by the feet of the wild-deer in the first instance, and widened by his own bolder tread, soon reached the bottom of the chasm, though not until he had flushed from the dense oak covert two noble black cocks with their superb forked tails, and glossy purple-lustered plumage, which soared away, crowing their bold defiance, over the heathery moorlands.

"Once at the water's edge, the young man's tackle was speedily made ready, and in a few minutes his long line went whistling through the air, as he wielded the powerful two-handed rod, as easily as if it had been a stripling's reed, and the large gaudy peacock-fly alighted on the wheeling eddies, at the tail of a long arrowy shoot, as gently as if it had settled from too long a flight. Delicately, deftly, it was made to dance and skim the clear, brown surface, until it had crossed the pool and neared the hither bank; then again, obedient to the pliant wrist, it arose on glittering wing, circled half round the angler's head, and was sent fifteen yards aloof, straight as a wild bee's flight, into a little mimic whirlpool, scarce larger than the hat of the skilful fisherman, which spun round and round just to leeward of a gray ledge of limestone. Scarce had it reached its mark before the water broke all around it, and the gay deceit vanished, the heavy swirl of the surface, as the break was closing, indicating the great size of the fish which had risen. Just as the swirl was subsiding, and the forked tail of the monarch of the stream was half seen as he descended, that indescribable but well-known turn of the angler's wrist, fixed the barbed hook, and taught the scaly victim the nature of the prey he had gorged so heedlessly.

"With a wild bound he threw himself three feet out of the water, showing his silver sides, with the sea-lice yet clinging to his scales, a fresh sea-run fish of fifteen, ay, eighteen pounds, and perhaps over.

"On his broad back he strikes the water, but not as he meant the tightened line; for as he leaped the practised hand had lowered the rod's tip, that it fell in a loose bight below him. Again! again! again! and yet a fourth time he bounded into the air with desperate and vigorous soubresaults, like an unbroken steed that would dismount his rider, lashing the eddies of the dark stream into bright bubbling streaks, and making the heart of his captor beat high with anticipation

of the desperate struggle that should follow, before the monster should lie panting and exhausted on the yellow sand or moist greensward.

"Away! with the rush of an eagle through the air, he is gone like an arrow down the rapids—how the reel rings, and the line whistles from the swift working wheel; he is too swift, too headstrong to be checked as yet; tenfold the strength of that slender tackle might not control him in his first fiery rush.

"But Jasper, although young in years, was old in the art, and skilful as the craftiest of the gentle craftsmen. He gives him the butt of his rod steadily, trying the strength of his tackle with a delicate and gentle finger, giving him line at every rush, yet firmly, cautiously, feeling his mouth all the while, and moderating his speed even while he yields to his fury.

"Meanwhile, with the eye of intuition and the nerve of iron, he bounds along the difficult shore, he leaps from rock to rock, alighting on their slippery tops with the firm agility of the rope-dancer, he splashes knee-deep through the slippery shallows, keeping his line ever taut, inclining his rod over his shoulder, bearing on his fish ever with a killing pull, steering him clear of every rock or stump against which he would fain smash the tackle, and landing him at length in a fine open roomy pool, at the foot of a long stretch of white and foamy rapids, down which he has just piloted him with the eye of faith, and the foot of instinct.

"And now the great Salmon has turned sulky; like a piece of lead he has sunk to the bottom of the deep black pool, and lies on the gravel bottom in the sullenness of despair.

"Jasper stooped, gathered up in his left hand a heavy pebble, and pitched it into the pool, as nearly as he could guess to the whereabout of his game—another—and another! Aha! that last has roused him. Again he throws himself clear out of water, and again foiled in his attempt to smash the tackle, dashes away down stream impetuous.

"But his strength is departing—the vigor of his rush is broken. The angler gives him the butt abundantly, strains on him with a heavier pull, yet ever yields a little as he exerts his failing powers; see, his broad, silver side has thrice turned up, even to the surface, and though each time he has recovered himself, each time it has been with a heavier and more sickly motion.

"Brave fellow! his last race is run, his last spring sprung—no more shall he disport himself in the bright reaches of the Tamar; no more shall the Naiads wreathe his clear silver scales with river-greens and flowery rushes.

"The cruel gaff is in his side—his cold blood stains the eddies for a moment—he flaps out his death-pang on the hard limestone.

"'Who-whoop! a nineteen pounder!'

"Meantime the morning had worn onward, and ere the great fish was brough to the basket, the sun had soared clear above the mist-wreaths, and had risen so high into the summer heaven that his slant rays poured down into the gorge of the stream, and lighted up the clear depths with a lustre so transparent that every pebble at the bottom might have been discerned, with the large fish here and there floating mid depth, with their heads up stream, their gills working with a quick motion, and their broad tails vibrating at short intervals slowly but powerfully, as they lay motionless in opposition to the very strongest of the swift current.

"The breeze had died away, there was no curl upon the water, and the heat was oppressive.

"Under such circumstances, to whip the stream was little better than mere loss of time, yet as he hurried with a fleet foot down the gorge, perhaps with some ulterior object, beyond the mere love of sport, Jasper at times cast his fly across the stream, and drew it neatly, and, as he thought, irresistibly, right over the recusant fish; but though once or twice a large lazy Salmon would sail up slowly from the depths, and almost touch the fly with his nose, he either sunk down slowly in disgust, without breaking the water, or flapped his broad tail over the shining fraud as if to mark his contempt.

"It had now got to be near noon, for, in the ardor of his success, the angler had forgotten all about his intended breakfast; and, his first fish captured, had contented himself with a slender meal furnished from out his fishing-basket and his leathern bottle.

"Jasper had traversed by this time some ten miles in length, following the sinuosities of the stream, and had reached a favorite pool at the head of a long, straight, narrow trench, cut by the waters themselves in the course of time, through the hard shistous rock which walls

the torrent on each hand, not leaving the slightest ledge or margin between the rapids and the precipice.

"Through this wild gorge of some fifty yards in length, the river shoots like an arrow over a steep inclined plane of limestone rock, the surface of which is polished by the action of the water, till it is as slippery as ice, and at the extremity leaps down a sheer descent of some twelve feet into a large, wide basin, surrounded by softly swelling banks of greensward, and a fair amphitheatre of woodland.

"At the upper end this pool is so deep as to be vulgarly deemed unfathomable; below, however, it expands yet wider into a shallow rippling ford, where it is crossed by the high-road, down stream of which again there is another long, sharp rapid, and another fall, over the last steps of the hills; after which the nature of the stream becomes changed, and it murmurs gently onward through a green pastoral country, unrippled and uninterrupted.

"Just in the inner angle of the high-road, on the right hand of the stream, there stood an old-fashioned, low-browed, thatch-covered, stone cottage, with a rude portico of rustic woodwork overrun with jasmine and virgin-bower, and a pretty flower-garden sloping down in successive terraces to the edge of the basin. Beside this, there was no other house in sight, unless it were part of the roof of a mill which stood in the low ground on the brink of the second fall, surrounded with a mass of willows. But the tall steeple of a country church, raising itself heavenward above the brow of the hill, seemed to show that, although concealed by the undulations of the ground, a village was hard at hand.

"The morning had changed a second time, a hazy film had crept up to the zenith, and the sun was now covered with a pale golden veil, and a slight current of air down the gorge ruffled the water.

"It was a capital pool, famous for being the temporary haunt of the very finest fish, which were wont to lie there awhile, as if to recruit themselves after the exertions of leaping the two falls and stemming the double rapid, before attempting to ascend the stream farther.

"Few, however, even of the best and boldest fishermen, cared to wet a line in its waters, in consequence of the supposed impossibility of following a heavy fish through the gorge below, or checking him at the brink of the fall. It is true, that throughout the length of th

pass, the current was broken by bare, slippery rocks peering above the waters, at intervals, which might be cleared by an active cragsman; and it had been in fact reconnoitered by Jasper and others in cool blood, but the result of the examination was that it was deemed impassable.

"Thinking, however, little of striking a large fish, and perhaps desiring to waste a little time before scaling the banks and emerging on the high-road, Jasper threw a favorite fly of peacock's herl and gold tinsel lightly across the water; and, almost before he had time to think, had hooked a monstrous fish, which, at the very first leap, he set down as weighing at least thirty pounds.

"Thereupon followed a splendid display of piscatory skill. Well knowing that his fish must be lost if he once should succeed in getting his head down the rapid, Jasper exerted every nerve, and exhausted every art to humor, to meet, to restrain, to check him. Four times the fish rushed for the pass, and four times Jasper met him so stoutly with the butt, trying his tackle to the very utmost, that he succeeded in forcing him from the perilous spot. Round and round the pool he had piloted him, and had taken post at length, hoping that the worst was already over, close to the opening of the rocky chasm.

"And now perhaps waxing too confident, he checked his fish too sharply. Stung into fury, the monster sprang five times in succession into the air, lashing the water with his angry tail, and then rushed like an arrow down the chasm.

"He was gone—but Jasper's blood was up, and thinking of nothing but his sport, he dashed forward, and embarked, with a fearless foot, in the terrible descent.

"Leap after leap he took with beautiful precision, alighting firm and erect on the centre of each slippery block, and bounding thence to the next with unerring instinct, guiding his fish the while with consummate skill through the intricacies of the pass.

"There were now but three more leaps to be taken before he would reach the flat table-rock above the fall, which once attained, he would have firm foot-hold and a fair field; already he rejoiced, triumphant in the success of his bold attainment, and confident in victory, when a shrill female shriek reached his ears from the pretty flower-garden; caught by the sound, he diverted his eyes, just as he leaped, toward

the place whence it came; his foot slipped, and the next instant he was flat on his back in the swift stream, where it shot the most furiously over the glassy rock. He struggled manfully, but in vain. The smooth, slippery surface afforded no purchase to his griping fingers, no hold to his laboring feet. One fearful, agonizing conflict with the wild waters, and he was swept helplessly over the edge of the fall, his head, as he glanced down foot foremost, striking the rocky brink with fearful violence.

"He was plunged into the deep pool, and whirled round and round by the dark eddies long before he rose, but still, though stunned and half-disabled, he strove terribly to support himself, but it was all in vain.

"Again he sunk and rose once more, and as he rose that wild shriek again reached his ears, and his last glance fell upon a female form wringing her hands in despair on the bank, and a young man rushing down in wild haste from the cottage on the hill.

"He felt that aid was at hand, and struck out again for life—for dear life!

"But the water seemed to fail beneath him.

"A slight flash sprang across his eyes, his brain reeled, and all was blackness.

"He sunk to the bottom, spurned it with his feet, and rose once more, but not to the surface.

"His quivering blue hands emerged alone above the relentless waters, grasped for a little moment at empty space, and then disappeared.

"The circling ripples closed over him, and subsided into stillness.

"He felt, knew, suffered nothing more.

"His young, warm heart was cold and lifeless—his soul had lost its consciousness—the vital spark had faded into darkness—perhaps was quenched for ever."

THE IMPLEMENTS OF SALMON FISHING.

TIME was, when every angler was required to make his own instruments, from the rod itself to the artificial fly, but now, so general has become the love of this calm and gentle pursuit, and so multiplied and subdivided are all trades and professions, that there are few cities in the civilized world, of any magnitude, in which it is not easy, at any moment, to procure anything that is requisite for this pursuit.

Of consequence, the necessity for skill in manufacture of implements has passed away, and, comparatively speaking, but few anglers think it necessary any longer to be familiar even with the method of tying their own flies, the tackle-shops furnishing every possible variety, more neatly executed, it is probable, and consequently more killing, than any could be of private manufacture.

Still, to tie a neat and taking fly is a very useful accomplishment to the enthusiastic fisherman, especially when he is in wild and remote districts, as frequently must be the case; and at times some rare natural fly will be seen on the water, which it may be found expedient to imitate without delay.

The art of tying flies is attained with greater readiness, and, in fact, is far less difficult, than is generally thought, or than would be imagined needful, from the beautiful delicacy of the manufacture in its perfection. Most works on practical angling contain long and elaborate directions how to hold, and how to tie the feathers on the hook, but all these are, in my opinion, utterly valueless and futile; nor do I believe that any person has ever learned either to tie a fly, or to cast it when tied, from the perusal of any printed explanation; any more than the young sportsman has ever acquired the knack of shooting on the wing except by practice and experience.

The best way to acquire the art of tying flies is to observe carefully the manipulation of some skilful operator, and to obtain from him, during the performance of the work, oral instructions on the subject.

From any good tackle-maker, a few lessons can be obtained at a very small expense, and these will, in a very short space of time, render the novice *au fait* to the trick.

The first thing to be considered in the angler's equipment, is the rod, and it is here well to observe that, for almost every sort of fishing, some different and peculiar rod is essential. That which is commonly called a general fishing-rod, is, in fact, an abomination, and is useful only to the bait-fisher, and even for him is an awkward and ineffective instrument, it being impossible so to regulate the arrangement of the lower joints as to produce that regular and equable degree of pliancy alike with a stiff baiting or with a pliant fly-top.

For the Salmon, the rod should not be of more than eighteen, or less than sixteen feet; the longer is apt to be a little cumbrous, and deftly to wield a double-handed Salmon-rod, during a whole summer-day, requires no small practice of the muscles. The best wood for the butt, which should be very stout and solid, is well-seasoned maple, which is both light and strong; the second joint of ash, the third of hickory, and the fourth or top joint of equal parts of lance-wood, or split bamboo, carefully spliced together.

Many experienced anglers prefer to have their Salmon-rods manufactured without metal joints, but with neatly-cut and accurately-fitted scares, which are adjusted and firmly spliced together with strong waxed-end when at the river-side.

The supposed advantage of this method is the greater certainty of the rod's holding together during a severe struggle, in the course of which a joint will sometimes be disengaged from the socket; and a greater equability of pliancy throughout the whole length, from the butt to the end, which is supposed to be in some degree impaired by the metallic ferrules into which the heads of the ferruled joints are inserted.

In the present improved state of the manufacture of all sporting articles, I must however admit that these objections are, in my opinion, very fanciful, and that the trouble of splicing and unsplicing greatly exceeds the benefit derived from the practice.

Nothing can be more beautifully regular and equal throughout their whole length, than the springy bend of the best English, Irish, Scottish, and American Salmon-rods; and I may here record it as my

deliberate opinion, that the best rods in the world are now manufactured in the city of New York, and that CONROY is superior, as a fly-rod maker, to either Chevalier or Martin Kelly, of universal reputation. David Welch, too, has few equals, if superiors.

The reel should be very large, capable of containing one hundred feet of twisted line, composed of hair and silk intermingled, and tapering gradually from the centre to each end, where it should be neatly looped to a bottom of the best and stoutest Spanish silk-worm gut, as thick, if possible, as the 32nd of an inch, to which the hook-links of the flies should be fastened.

The hook-link for Salmon fishing should be of the best strong gut. The casting-line, of the best Salmon gut, is to be looped to the reel-line, and must taper thence to the hook-link. The loops must be whipped securely on both sides with best waxed silk.

The casting-line is to be three yards in length without the addition of the fly-link. Every knot on the casting-line should be what anglers term the *water-knot*, which is merely a common knot made by passing the ends to be secured three times around each other; the ends to be well whipped as before.

The casting-line is to terminate with a loop, and the fly is to be knotted with the water-knot, to a link also looped, and secured by waxed line, which is then to be looped on the casting-line.

One fly only should be used for Salmon fishing.

The best method of attaching the hand fly and the second fly to the casting line for trout-fishing, when three flies are to be used, as is often the case, is entirely different from anything hitherto stated.

There is but one knot which will allow these flies to hang truly, and that is fully described with a cut at page 63.

It is very desirable that the gut should by dyed, in order to deaden its silvery glitter, which is too conspicuous in the water, and often scares the fish. The best preparation for this purpose is dark green tea, which brings it nearly to the color of water, when slightly discolored by rain, at which time the fish are most apt to bite freely.

Too much attention cannot be paid by the angler to the quality and condition of his gut-lengths, or to the proper adjustment of the knots and loops by which it is fastened. These can scarcely, indeed, be too narrowly or jealously scrutinised, as gut is a material which is

easily frayed and cut by its own friction, and the slightest imperfection will often cause the loss of a very heavy fish.

The great beauty of gut is, to be correctly round and perfectly equal in thickness, which enables it to stand a strain which, if it were unequal, would cause it to give way.

The reel should be of brass, which I prefer to German silver, bushed and rivetted with steel. It should have a balance handle, and a click, which is of great use, as preventing more of the line than is required from running off it while in the act of casting, before a fish is struck; but a catch or stop must on no account be used, as it will frequently stop the line at the very moment when it should run the fastest. I had almost forgotten to add, that the simple reel is vastly preferred by all truly scientific anglers to the multiplier, which in fact is now almost exploded.

The fly-hooks should unquestionably be of the Limerick bend, and even for spinning with the parr, or fishing with the worm or the deadly roe-bait, all of which are very killing to the Salmon, the same form is the preferable.

The great size and weight of the Salmon renders the use of the landing-net impossible, and it is, moreover, at the best, a clumsy and unportable machine. For it, therefore, the angler substitutes the gaff—a sharp, unbarbed hook, of convenient size, which screws securely into the head of a stout ashen shaft, the butt of which may conveniently be hollowed so as to contain spare fly-tops, as it is inadmissible to subtract from the weight of the rod-butt by hollowing it.

With this hook, so soon as the fish is sufficiently exhausted to be drawn within striking, held in the right hand while the rod is transferred to the left, he gaffs the fish steadily and sharply in the solid portion of the tail below the abdominal cavity, which gives it a firm hold, and enables the lucky sportsman to pull out even a forty-pounder with but little trouble.

It is not a bad plan to have a stout knife-blade, with the inner edge sharpened, hinged on the back of the gaff, which will often be found of use in cutting away any twig or other obstacle which may entangle the fly.

A creel is of little use to the Salmon fisher, as in order to carry any number of these noble fish, one would be requisite of the size of a

clothes-basket; and such is the weight of the fish, that, if you expect to be successful, an attendant is indispensable.

With these instruments, then, a well-filled fly-book in his pouch, and perhaps a spare gut foot-length round his hat, the fisherman may deem his outfit perfect.

A suit of plain dark clothes, a pair of stout nailed shoes, and heavy loose trowsers of the coarse Scottish plaid worn by the shepherds, is the best attire for the sportsman. India-rubber boots are an abomination, unwholesomely confining the perspiration, and excessively uncomfortable from the intense heat which they create; besides, an angler is hardly the sort of person to care much about wet feet or a soaked jacket.

Having now equipped and rigged him, we will conduct him to the marge of limpid lake or rapid torrent, and see how best his scaly prey he may ensnare.

In order to become a fly-fisher, I think that something of an especial genius is necessary—I mean a fly-fisher in the highest sense of the word, and regarded in the same light as the sportsman whom we can deservedly term a crack-shot.

Still, although something of a natural and inherent aptitude is necessary, practice, experience, and a love of the art, go so far that no one who really desires to attain eminence in this skill need despair, for perhaps no one very keenly desires it who has not that aptitude, though perhaps latent, and even of himself unsuspected.

To teach a man, as I have said before, by writing or even by oral instruction, unless coupled with active practice and example, how to make a fly, how to cast a fly, how to hook a fish, or how, when hooked, to kill him, is to my apprehension impossible. Yet without some instructions on this subject, a work on Fishing would justly be deemed imperfect, and perhaps even impertinent.

After the first slight skill is attained which enables a fisherman to cast a fly at all without whipping it off the hook-length, the great points to be acquired are, precision in casting, and neatness in delivering the fly.

In Salmon fishing with the double-handed rod, all these things are somewhat more difficult than with the light twelve-foot Trout-rod, and more practice is requisite before perfection can be gained; yet the

mode is identical, and the instructions which alone can be given are alike few and simple.

The first thing to be observed is, that the rod must not be firmly grasped, but held with a loose and delicate play of the thumb and fingers, as a cue should in billiard playing, or a foil in fencing. Secondly, that in throwing out the fly, nothing like a jerk or snap should be performed, such as is done with a four-horse whip in flanking a leader. It is very difficult to explain, except by comparison, what that movement is; but it may perhaps be described as by a sudden checking of the propelling power, or as almost a retroversion of it at the moment of its greatest impetus, somewhat such as that which is termed spinning, or Englishing, a ball at billiards.

The rod being held lightly in the fingers, the butt of it must be so moved in front of the person, with all the muscles of the arm relaxed, the elbow and the wrist free and pliant, that the tip shall describe a complete circle above and something behind the head, and it will be not amiss for the tyro to practise this motion without attempting to cast as yet any line.

Secondly, it must be remembered, when the line and fly is brought into play, that by the circular motion of the tip, the whole line, with its cast of flies, must be made to stream out at full length, and to describe a semicircle, so that at the instant previous to propulsion, if we desire to throw directly forward, the flies shall be at the whole length of the extended line, exactly behind us; when they must be thrown out by a direct and even motion, without any jerk, and yet must be in some sort checked rather by a gradual holding up or cessation of the impelling force, than by any sudden stop or retrogression.

The mode of casting which I have endeavored to describe for a forward throw, must be used in all cases; if to the right, the line must stream out, and the flies be extended at full length to the extreme left, and *vice versâ;* and this is the method by which accuracy and precision in casting can be acquired, and by perseverance in which, with experience, the fisherman will ultimately succeed in throwing his stretcher, or last fly, with certainty into a smaller circumference than that of his own hat.

This it is which we call precision.

By neatness, we intend the knack of so delivering the line that each one of the cast of flies shall alight upon the surface of the water singly and severally, and as lightly as the thistle-down, without any portion of the foot-length, much less of the line, bagging or falling in a bight upon the stream.

This delivering of the cast at the end of a perfectly straight, yet perfectly easy line, is the first great thing to be obtained. If we attempt to throw the flies, except after having made them describe a full semicircle in the direction opposite to the purposed cast, we shall throw them nowhere.

If we fling out the whole line loosely, it will fall in a baggy bight upon the water, probably striking the surface in advance of the flies, and certainly making a splash and scaring away the fish which we desire to allure.

If we check it too suddenly, or jerk it back at all, we shall snap off all our flies with a loud crack, and so remain disarmed and useless for the nonce.

In practising, the novice should use but a short line, five or six yards at the utmost, and a single fly—and when he can throw that with certainty into a space of a few feet in circumference, he may gradually let out his line till he has reached fifteen yards, which I regard as the extreme length that can be managed with certainty, neatness, and precision, and add to the stretcher his first and second droppers, more than which are wholly useless.

Having said thus much of the mode of casting the flies, we will suppose our angler clad in the plainest and least obtrusive colors, at the margin of the stream, if it be such as he can command with his double-handed rod, or wading it if not too deep, or in his boat if it be too broad to be cast over successfully.

First, he shall go *down* stream ; for the motion of the water will so keep his line taut, the benefit of which hereafter ; and he will also have fewer casts to make, and find less trouble in giving a natural and easy movement to the artificial insect, which he must keep ever floating on the surface. Furthermore, the fish are wont to lie, especially in swift waters, with their heads up stream, and will therefore perhaps take the fly most readily when cast down, and drawn gently over them.

Secondly, he must on no account fish with the sun behind his back,

for, if he do, the shadow of his body, with his arms thrashing the air, and the counterfeit presentment of his long rod vibrating aloft, will be thrown on the bright surface of the waters in such a manner as will undoubtedly alarm the fish; which, however much doubt there may exist as to their powers of auscultation, no one will deny to be capable of quick vision.

Thirdly, he shall not so draw his fly along the surface as to give it the appearance or reality of floating *up* stream; for flies do not in nature float up stream; nor do the Trout or Salmon, although they may never have studied logic, and are probably incapable of deducing consequences from causes, lack the ability to discern what is, from what is not, natural.

Across the stream he may bring it gently and coquettishly home, with a slow whirling rotatory motion, letting it swim down in the swifter whirls of the stream, and float round and round in the eddies, with this special observance, that he shall, in so far as he can, keep it ever at the end of a tight line, for so only will the fish hook itself, without any movement of the hand on the angler's part—an end most desirable to effect.

Both Salmon and Trout lie in wait for their prey, for the most part, rather than swim in pursuit of it in schulls or companies. They are often, I would say generally, found in pairs, and therefore, after killing one in any favorable pool or eddy, it will be well not too soon to desert the spot, even although it may have been disturbed by the bustle and hurly of the first capture.

The tail of swift rapids, where some large stone breaks the force of the current, and causes a lull, or, as one would say of wind, a lee, will always be found a likely spot wherein to cast; and in pools, between two rapids or cascades, the head and the foot, immediately above the one and below the other descent, will generally each hold a fish.

Still clear deep reaches will again be found to contain many times the most, and often the largest fishes, especially of Brook Trout; and these places require the neatest and the finest fishing, for two very sufficient reasons; first, that the transparency of the water enables the fish clearly to discern the angler, unless he stand well back from the margin of the bank; and, secondly, that its stillness allows all the

imperfections of the artificial fly, and perhaps the gut to which it is appended, to be discovered by the intended victim.

In nothing is piscatory skill more distinctly evidenced, than by the instinctive accuracy with which, in whipping a stream, the practical angler will discern what places to fish closely, accurately, neatly; which to pass over lightly—in other words, which are more and which are most unlikely to hold the objects of his pursuit; and this skill, this power, like that of casting the fly, or even in a greater degree than that, can be gained only by dint of long practice and accurate observation.

As I had occasion to remark, not once, but many times, in my "Field Sports," *cæteris paribus* of eye, hand and nerves, on which almost everything depends, the closest observer of nature, the most diligent inquirer into the actions, the habits, the prey, the haunts, the every-day life of the bird or beast which he is pursuing—in other words, the best naturalist—will be the best and most successful sportsman; and so it is, and perhaps even more so, in the case of the angler. And, indeed, after years spent in this exciting and yet gentle pursuit, the angler will ever find that he has something still to learn, that he has gained something daily, if he keep his ears, his eyes, his mind open to the sounds, the sights, the beautiful provisions of nature.

In large lakes, which must be fished from boats, the vicinity of the shores, the edges of shoals, and the holes in the close neighborhood of large rocks or boulders which cause eddies, and above all the entrances or outlets of streams, brooks and rivers, are the likeliest places in which to find Salmon, but not reedy banks or weed beds, as is the case with the Pickerel and Mascalonge; and such spots as these deserve the utmost care and attention of anglers. And now, I believe that I have said all that I can say about the casting of the fly, and the places into which it should be cast in order to ensure the first success, the getting a rise, I mean, from this noblest of fishes. Little is done, however, in getting this rise, unless we know how to strike, and how to kill him when he has risen. On this head, perhaps, it might be said that the art of striking a fish, or so handling the rod that the barbed hook shall be buried securely and quickly, or ere the fish has time to discover that the gaudy bait is an unreal mockery, without substance or savor, consists in knowing what is *not*, rather than what *is* to be done.

Very certain it is that the fly must not be jerked or twitched away quickly, as is done by ninety-nine hundredths of novices, who thereby instead of fixing the bait in, flirt it out of the mouth of the Salmon and probably prick him in doing so, rendering him thereby shy of again looking at the bait, and teaching him a lesson, which he may not forget in many days.

At two moments only, of the ordinary cast of a fly, is the fish nearly sure to hook himself—that is, when it first alights on the surface of the stream, and when it is in the very act of being withdrawn from it, for the purpose of making a fresh throw—for at these two moments only is it necessarily at the end of a taut extended line. When a fish strikes boldly at either of these two points of time, it is very sure to hook itself without any exertion of the angler; but if the line is in the slightest degree curved or baggy, unless there is a certain almost indescribable movement of the wrist, the fly will often be rejected, owing to the discovery of its quality, and the fish will so escape scot-free.

This striking I have seen variously described, but never, in my opinion, comprehensibly. I consider that the great thing in fly-fishing is to keep the line always as straight as possible, never allowing any portion of it to float on the water, and to have the fly never submerged, nor yet skipping, but trailed evenly along the ripples, as if it were naturally floating down, at the end of a straight extended line. By this method, the chances of striking your Salmon, without any effort on your own part, will be hugely increased. If, however, it be found necessary to strike, this must not be done by a jerk or backward whip movement of the rod, but by the slightest possible turn of the wrist inward and downward—what that turn is, every angler knows, but it certainly cannot be described in writing, nor can it be, I think, very easily demonstrated—so exceeding slight it is—by example.

More fish are, in my opinion, lost by clumsiness, and especially by over-violence at this moment, than at any other time; the utmost caution, therefore, and delicacy of manipulation, are indispensable; and at first, until he has killed some fish, and obtained some practical experience in the art, I confidently advise the novice to beware of striking; to allow the fish, if possible, to hook himself; and rather to lose him from his not doing so, than from his own act by whipping the

half-swallowed fly out of his imperilled jaws. If strike he must, let him do it with the least possible force or exertion.

When first a large and lively fish feels the hook, he will not unfrequently, if checked suddenly, throw himself clear out of the water to the height of several feet, and so endeavor to cast himself across the tightened line, which, if he succeed in doing, he shall break it surely, and escape. The counter-movement to this dodge, which is often repeated many times in rapid succession, is to sink the top of the rod quickly, so as to slacken the line, and suffer the fish to strike it only when lying in a bight on the water; but care must again be taken here to reel it in again quickly, lest it may become entangled by the fish rushing suddenly in towards the angler.

Beyond this there is not much to say on the score of playing a hooked fish; the great end and object is to keep him, with as heavy a strain as you can venture to support upon his mouth, with his head *down* stream; for in that position the water enters his gills the wrong way, so that the vital principle of the oxygen cannot be separated from it by the branchial apparatus, and the fish naturally dies by suffocation, or by something analogous to drowning.

To effect this, very much delicacy and nicety of touch are requisite; the rushes of the fish are sometimes of fearful impetus and velocity, and sustained for such a length of time as to take nearly all the line off the reel, and to compel the angler to run at full speed, up or down the bank, as it may be, in order to avoid smashing his tackle. It is well here to observe, that it is in all cases the best plan to follow your fish as early in the game, and as rapidly, as you can, rather than to let off too much line, as you thereby keep so much in hand for an emergency.

The great principle is, to make the fish pull as hard as possible without ceding line, and never to give him an inch that he does not exact from you by force; the knowledge of the exact amount of resistance which you may offer, and of the when exactly and how much you must yield, is the grand proof of the Salmon-fisher's science. If he run for a rock, against which to smash your tackle, or for a cascade or cataract, over which you cannot pilot him with a hope of success, you must resist him to the last, which is done by advancing the butt, firmly grasped, toward him, and bearing your rod backward over your

right shoulder, thereby compelling him to strain out the line, the velocity of which you must regulate with the ball of your thumb, inch by inch from the reel, against the whole reluctance and spring of the elastic rod.

When the fish runs in, the rod must be held nearly erect, and the line reeled in as quickly as possible. If the fish turn sulky, as he will sometimes, and plunge down to the bottom, lying there like a stone or a lump of lead, he must be aroused and forced to run again by a pebble cast in as closely as may be to the spot where he lies, and then his run must be alternately humored and controlled, like the whims of a pretty woman, until his resistance is overpowered, and, like her, he yields him to your will.

The fly is, as I have before observed, by far the most effective and killing bait for the Salmon, although it is very doubtful for what the animal mistakes it, since it has no resemblance in nature. The best are, in my opinion, combinations of peacock herl, and jay's wing, with body of pink, blue or green silk twined with gold or silver tinsel; there are, however, many other gay and gaudy feathers which are nearly equally killing, and every fisherman has his own favorites. The accompanying plate contains at No. 1, representations of several varieties of Salmon-flies, and at No. 2 of Lake-flies for great Trout, which I know to be killing, as I know them to be beautiful—and which were prepared especially for this work, to my order, by the Conroys of Fulton-street, New York, of whom I have already spoken as, in my opinion, the best rod and tackle maker in America, if not perhaps in the world.

The Salmon, especially when quite fresh-run from the sea, will take the worm at times greedily; for which mode he must be fished for with a stiffer rod, similar to that used for Bass angling, with a quill-float, and enough of slot on the gut to carry the bait down close to the bottom. The best worms are the large *lob* or *dew*-worms, and they should be cleansed or scoured by keeping them for several days previous to using them in a pot full of moistened moss. Two worms should be used, and they should be baited thus:

Enter the barb of a large sized No. 0, or No. 1 Limerick Salmon-hook at the head of your first worm, and bring it out at the middle; run the worm quite up on the gut above the arming of the hook;

again enter the barb at the middle of the second worm, and bring it up very nearly to the head. Draw down the first worm to meet the second, and the bait will move on the bottom with a natural motion.

Paste composed of roe of the Salmon, taken out when freshly killed, washed carefully, and cleansed of all the impurities, the blood and filamentous matter, thoroughly dried in the air, salted with two ounces of rock-salt, and a quarter of an ounce of saltpetre to a pound of spawn, dried gently before a slow fire, or in an oven at a low heat, and then potted down and covered with melted lard or suet in earthen pots, is a most murderous bait both for Trout or Salmon. When a few weeks old, it will cut out of the pots like stiff cheese, and will adhere readily to the hook, though it is not amiss to bind it on with a slip of Salmon-colored floss silk. This will be found as effective for Brook Trout as for Salmon; and it is not unworthy of remark that the roe of the melter will most surely take the female, and that of the spawner the male fish. It has been hence suggested that if people *will* fish on the spawning beds when the fish are in the act of breeding, by using the female spawn or roe, they will do much less mischief than by any other mode, though it is little probable that the gothic savages who resort to these practices at all will trouble themselves so far as even to endeavor to do a minimum of mischief.

Lastly, the Minnow, the Shiner, the Smelt, the Sparling or Atherine, and above all, the young Parr, are very killing baits, especially when there is a freshet in the stream, for the Salmon, upon spinning-tackle.

A powerful long rod should be used for this mode of fishing; the line and reel as before, but there should be at least two swivels on the line, and a small funnel-shaped piece of lead sliding upon the line.

There should be one large No. 1 Limerick hook at the end of the gut, and two smaller, about 10 and 5, tied back to back of the larger one. The smallest above, at the full length of the bait, to hook into the lip, when the funnel will slide down upon the nose. The second hook should be passed through the back below the first dorsal fin, and the large hook entered in the solid part of the body beside the anal fin, and brought out at the fork of the tail, giving a curve to the fish, which causes it, when drawn rapidly through swift water, to spin and glance beautifully, in a manner most attractive to this noble fish. All

the fins should be cut off except the pectoral on the outer side of the curve, which will cause it to spin more certainly.

Some persons use a second hook-length with three No. 7 hooks tied back to back triangularly, not entered in the bait, but suffered to play loosely around it: but I see no advantage in the addition.

With any of these baits, with the art to boot, and a clear eye, a steady nerve and true hand, anywhere almost eastward of the Kennebec, and thence northward to the grand St. Lawrence, the adventurous fisherman is certain of such sport, as, once tried, makes all other fishing for ever more stale, weary, and unprofitable.

BOBBETT & EDMONDS Sc.

TROUT FISHING.

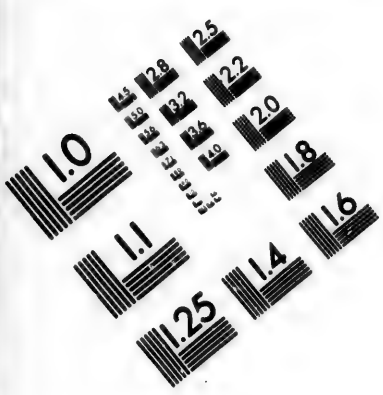
THIS charming sport, second only in its excitement to the skill which it requires, and in the quality of the captive, to its elder sister, Salmon-fishing, cannot be enjoyed in any part of the known world in greater perfection than on the northern continent of America.

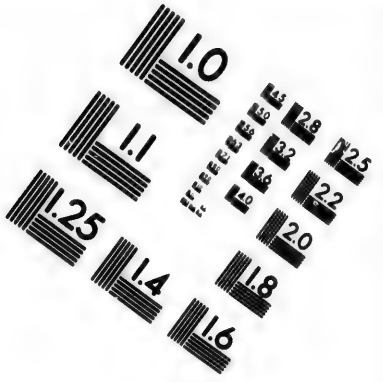
Everywhere from the Arctic Circle to somewhere about the forty-fourth degree of north latitude, everywhere from the mouth of the St. Lawrence and the wild shores of Gaspe and Chaleurs to the far coasts of the Pacific, and the swift streams of Oregon, this beautiful and active fish is found abundant, in every spring-stream and fountain-nourished lakelet.

Everywhere he is pursued eagerly, and esteemed a prize worthy of the sportsman's skill and the epicure's idolatry. To the northward and eastward he is, however, both the finest and the most plentiful. The rivers of New Brunswick and Nova Scotia swarm with Brook Trout ranging from half a pound to five pounds in weight. In the streams of Maine and New England they are equally abundant, although they are generally smaller in size, and are for the most part taken in the small mountain streams from which they rarely run down to salt water; whence their colors are less brilliant, and their flesh inferior in flavor.

In the State of New York they are of unrivalled excellence, and are found in vast numbers, especially in the streams of the south side of Long Island, in the lakes and rivers of the north-eastern counties which debouch into the basin of the St. Lawrence, and in all the streams of the south-western tier of counties which find their way southwardly into the Delaware, the Susquehannah and the Alleghany.

All the waters of Northern and Western Pennsylvania are likewise admirably stocked with this delicious and game fish, nor has any one need to seek better sport than he can find at Carman's or Snedecor's on Long Island. In the Marshpee river, on Cape Cod, famous as being





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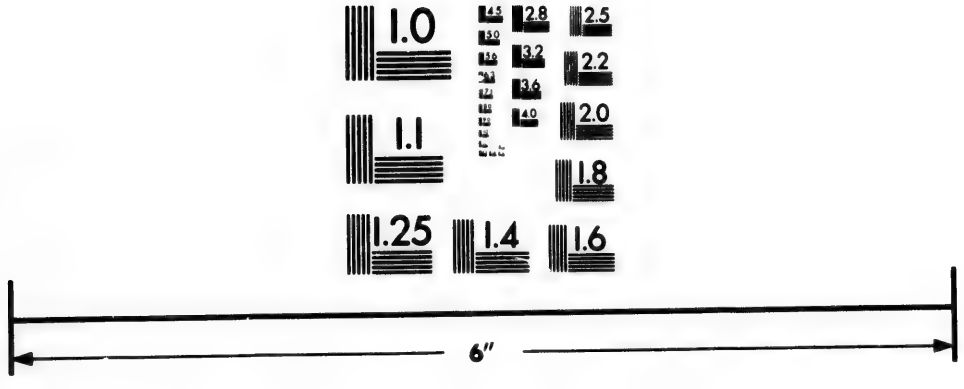

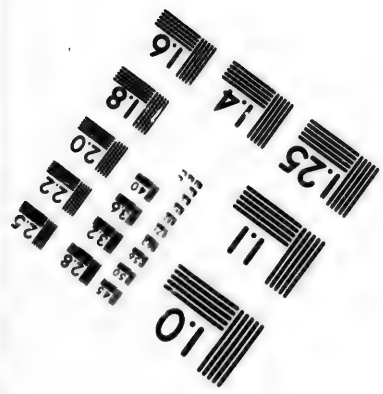

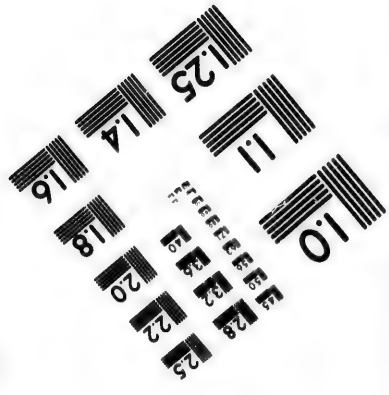

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WEBSTER, N.Y. 14580
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the favorite fishing-ground of that good sportsman and great statesman, Daniel Webster; in the Callikoon and Beaverkill on the east, and the fine Pennsylvanian streams on the west of the Delaware; in the net-work of lakes and rivers which renders Hamilton County in New York the angler's earthly paradise, or in the swift Canadian streams which swell the St. Lawrence, from the Michigan westward to the Sault St. Marie, and upward to the head of Lake Superior, sport is certain.

The implements of the Trout-fisher are similar, except in size and power, to those used in the capture of the Salmon; but as less strength is necessary to subdue, so is, perhaps, even greater delicacy requisite to ensnare him.

The Trout-rod should be twelve feet long, and as pliant, almost, as a coach-whip, equally bending from the butt to the tip. It should be composed of hickory, lancewood, or bamboo, with a solid butt of ash, at the extreme lower end of which should be attached a simple click-reel with a balance handle, but without a stop, capable of containing thirty yards of London made hair and silk line, tapering equally from the reel to the point. The bottom, or leader, as it is called generally in America, should consist of about five yards of round tapering silk-worm gut, and the flies should be three in number. Plain rings should be used on a fly-rod, and not the new tubular metallic guides, which stiffen it too much, and prevent its equal curvature under a strain.

For bait-fishing, spinning a minnow, or daping with a grasshopper, a stouter rod may be adopted, similar to that used for ordinary fresh-water, or shoal salt-water fishing.

The best baits are the Salmon-roe, prepared as I have described it, common brandlings or dew-worms, and any small fish, and especially its own young fry, which may be used either dead on spinning tackle such as is described above, or alive, hooked through the back under the first dorsal fin, and sunk with shot to within a few inches of the bottom. In this mode, the slightest possible quill float should be adopted. The spinning is by far the more sporting and exciting method; and in large streams running directly into salt water, where the finest and greatest Trout are found, and where they do not willingly rise to the fly, none is much more killing. In addition to these, a grasshopper dropped deftly on the surface just before the nose of a fat, basking, lazy

Trout, at the end of a short line, which is called daping, will oftentimes kill when all other plans fail; shrimps will be found effective in salt water creeks and river mouths, and in those sea bays which the fish haunts when in its greatest perfection, and very frequently in the same localities it will bite at a small white crab, a muscle, or the throat with the two pectoral fins attached, of one of its own species.

All of these, however, pale before the artificial fly, which is the most legitimate, the most scientific, the most exciting, because most difficult, and lastly, not leastly, the most killing, in nine waters of ten, of all the methods used to capture him.

There has long been a grand debate between fly-fishers, as to whether those are the most killing flies accurately copied from nature, or fancy flies similar to nothing in existence, composed of any gay and taking colors. It was formerly the general belief that the first were the most taking, and in the old books we find regular rules laid down, and particular flies ordered for every particular month of the year. But the former opinion has now been generally, and I think justly, discarded by the best anglers, while the practice of such a regular arrangement is now very generally exploded.

It is a remarkable fact that for the most part the same flies are the most killing in all waters, the world over, in Scotland, Ireland, Norway, and in the waters of America; nor is there any fly found more excellent for general use, or which possesses more ardent votaries, than the red hackle, which has probably killed more and larger fish than any that can be named.

In America, Trout-flies are used of a much larger size, and that more effectively than in Europe, and the small English fly is justly less estimated in these western waters. The colors of the American flies are likewise much brighter on the whole than is approved by British anglers, and fish will not unfrequently here take a gaudy scarlet ibis feather with a gold tinsel body, which a person who should use in Europe would not improperly be thought raving mad.

The flies which I hold the best are the red hackle, the ginger hackle, the black hackle, occasionally varied with bodies of gold or silver tinsel, the March-brown or dun-drake, the pale yellow dun and the blue dun—both very killing flies—the cow-dung fly, the stone fly, alder fly, the green and gray drakes; and for night and twilight fishing, any of

the gray, cream-colored, or mealy moths; of these I prefer a large white-winged moth with a black body. In many waters some of the coppery-golden and green peacock herls are found to kill well, and last season, 1848, nothing was so successful on Long Island as the scarlet ibis with a gold tinsel body. For my own fancy, however, I decidedly prefer the hackles of almost every color and variety, from the ginger, through all the shades of cock, grouse, partridge, woodcock, up to jet black; and my favorite cast is a *coch-a-bondu* or soldier palmer for my stretcher, a ginger hackle or-blue dun for my second, and a black palmer or a dotteril hackle for my first dropper. The accompanying plate of flies are many of the best and most beautiful varieties, and there is not one of them which at some time or another I have not proved to be killing. All these, as also the large gaudy lake flies, marked No. 2 on the plate preceding this, which very nearly resembles the Salmon-fly except in size only, and are deadly indeed to the Trout of the Adirondach waters, were all prepared expressly for representation in this work by Mr. Conroy, and are not, in my opinion, to be surpassed.

Beyond this I shall say nothing on the score of flies, nor shall I enter into any minute and elaborate descriptions of these or other varieties, with which most books on fly-fishing abound, *usque ad nauseam;* for I am satisfied that such descriptions must be entirely unsatisfactory and useless to the fisherman, who should attempt to tie flies by their aid, without other and more practical instruction; and they are so well-known to all anglers, and to all tackle-makers, by their names, that they can be readily and unmistakeably ordered by letter, and obtained at any distance, from any of the large cities. The following vignette is a representation of two well-known Ephemeræ, the common Green Drake or May-fly, and the Stone-fly, in their embryo and perfect stages.

In progress of this subject, I take the liberty of quoting, from Dr. Bethune's very beautiful edition of Walton's Angler, the following paper, which was drawn up and contributed to that work by myself, on the Trout-fishing of Long Island, at the request of the accomplished author. It contains everything that I knew or could collect at that time on this branch of the subject, and as I rest well-assured that my borrowing it will in nowise injure or interfere with that beautiful and

admirable work, while I feel that it would be useless and absurd to reword the same ideas and opinions, and so render it pseudo-original, I do not hesitate to extract it entire:

"The principal distinctions that strike the careful observer between the Trout of Long Island, or, indeed, I might say North America in general, and those of the British isles, is, first, the great uniformity of size on the part of the former, which rarely exceed two or three pounds in weight, and *never*, so far as I have been able to ascertain, five or six—and, secondly, the fact that in the United States, Trout are never taken in the large rivers, or, if ever, so rarely as to prove the rule by the wonder arising from the exception.

"On Long Island, there are some half-dozen instances on record, within three times as many years, of fish, varying in weight from four to six pounds, taken with the rod and line. Two of these instances occur to me, as connected with circumstances which may render the relation acceptable, as of anecdotes very unusual, and almost, but that they are proved beyond the possibility of doubt, incredible.

"Both these instances occurred at Stump-pond, on the north side; one in the pond itself, the other in the mill-pool, at the outlet.

"A gentleman from New York, thus runs the first story, who had never thrown a line, or taken a Trout in his life, and who had come out, lately equipped with a complete outfit of Conroy's best and strongest tackle, all spick-and-span new, and point device, on throwing his hook, baited with a common lob-worm, into the water, was greeted with an immediate bite, and bob of the float, which incontinently disappeared beneath the surface, carried away by the hard pull of a heavy fish. The novice, ignorant of all the soft and shrewd seductions of the angler's art, hauled in his prize, main force, and actually, without the aid of gaff or landing-net, brought to basket a five-pounder!

"The fact is remarkable; the example decidedly unworthy of imitation!

"The other instance to which I have referred, is, in all respects, except the size of the fish, the very opposite of the former; as, in it, the success of the fortunate fisherman is due as much to superior science in his craft, as *his*, in the former, is attributable to blind and unmerited good luck.

"The hero of this anecdote is a gentleman, known by the *nom de guerre* of Commodore Limbrick, a character in which he has figured many a day in the columns of the Spirit of the Times, and who is universally allowed to be one of the best and most experienced, as well as the oldest fisherman of that city.

"After having fished all the morning, with various success, in the pond, he ascertained, it seems, that in the pool below the mill there was a fish of extraordinary size, which had been observed repeatedly, and fished for constantly, at all hours of the day and evening, with every different variety of bait, to no purpose. Hearing this, he betook himself to the miller, and there having verified the information which he had received, and having satisfied himself that neither fly nor minnow, gentle nor red-worm, would attract the great Trout, he procured, *horresco referens*, a *mouse* from the miller's trap, and proceeding to troll therewith, took, at the first cast of that inordinate dainty, a fish that weighed four pounds and three-quarters!

"Another fish or two of the like dimensions have been taken in Liff. Snedecor's and in Carman's streams; and it is on record, that at Fireplace, many years since, a Trout was taken of eleven pounds. A rough drawing of this fish is still to be seen on the wall of the tavern bar-room, but it has every appearance of being the sketch of a Salmon; and I am informed by a thorough sportsman, who remembers the time and the occurrence, although he did not see the fish, that no doubt was entertained by experienced anglers who did see it, of its being in truth a Salmon.

"In the double-pond among the Musconetcong Hills, on the confines of New York and New Jersey, in the Greenwood lake in the same region, and in some other ponds in Orange County, Brook Trout have been occasionally taken of the same unusual size. One fish I saw myself on last New Year's Day, which, shameful to tell! had been caught through the ice, near Newburgh. This fish weighed an ounce or two above five pounds, and was well-fed, and apparently in good condition—but, as I said before, all these must be taken as exceptions, proving the rule, that Trout in American waters rarely exceed two or three pounds in weight, and never compare in size with the fish taken in England, and still less with those of the Scottish and Irish waters, in all of which, the regular, red-spotted, yellow-finned Brook Trout

are constantly taken, with the fly, of ten pounds weight and upward; and sometimes, in the lakes of Ireland and Cumberland, in the Blackwater, Coquet, and Stour rivers, attain to the enormous bulk of twenty-six and thirty pounds.

"With regard to the second point of distinction, I have never heard of a Trout being taken at all in the Hudson; never in the Delaware, even so far up as Milford, where the tributaries of that river abound in large and well-fed fish; never in the lower waters of the Connecticut, or any Eastern river so far as the Penobscot, although the head waters of all these fine and limpid rivers teem with fish of high color and flavor. In Great Britain, on the contrary, it is to the larger, if not to the largest, rivers that the angler looks altogether for good sport and large fish; and it is there as rare a thing to take a fish a pound weight in a rivulet or brook, as it is here to catch a Trout at all in a large river.

"In Canada, and in the British Provinces to the eastward of Maine, it is true that Sea Trout, or Salmon Peel, are taken of large size in the St. Lawrence, and in the rivers falling into the bays of Gaspè and Chaleurs; but although occasionally confounded with the Trout proper, this is in truth a totally different fish, and one, so far as I know, which is never taken in any of the waters of the United States.

"In appearance, the Brook Trout of America and Great Britain are to my eye almost identical; both presenting, in well-fed and well-conditioned fish, the same smallness of head, depth of belly, and breadth of back; the same silvery lustre of the scales, and the same bright crimson spots. The flesh of the American fish, when in prime order, and taken in the best waters, is, I must confess, of a deeper red hue, and of a higher flavor, than that of any which it has been my fortune to taste at home—and I have often eaten the Thames Trout, which, rarely taken below ten pounds in weight, are esteemed by epicures the very best of the species.

"We travel now, be it observed, by railroad to our fishing stations, but for the convenience of reviewing the country, and scanning the waters, in regular succession as we pass eastward, I will suppose that, as in the pleasant days of old, we are rolling along in our light wagon, over the level roads, on a mild afternoon in the latter days of March, or the first of April.

"We have started from Williamsburgh or Brooklyn, after an early dinner; passed through Jamaica; rolled over the plains towards Hempstead; and, passing through it without stoppage, have turned suddenly to the right towards the bays, beyond which lies the beach, with the incessant surge of the Atlantic moaning in the deep monotony of its calm, or thundering in the hoarse fury of its storm, against its pebbly barrier.

"Now we are in the land of Trout streams, baymen, and wild fowl.

"The rippling dash of falling waters catches our ear, at every half-mile as we roll along, and every here and there, the raised bank on our left hand with its line of stunted willows bent landward by the strong sea-breeze, the sluice-gate, and the little bridge, with the clear stream rushing seaward under it, tell us that we are passing a Trout pond.

"On the right hand, the salt meadows stretch away, a wide, waste, desolate expanse, to the bays, which glitter afar off under the declining sun, whence you can hear at times the bellowing roar of a heavy gun, telling of decimated flocks of brant and broadbill.

"Now we pass by a larger pond than any we have yet seen, with a mill at its outlet, and in a mile farther, pull up at the door of Jem Smith's tavern.

"And there we will halt to-night, although it be a better station for fowling than for fishing, for we are sure of neat though homely accommodation, and of a kindly welcome; and here it is that the first essay is to be made of Long Island waters.

"On this stream there are two ponds, both of which were formerly private property, and closed against all persons except those who were furnished with a permit; they are now open to all persons indiscriminately, and I believe without restriction as to the number that may be taken by each individual, or by a party. The consequence of this is, that these ponds have deteriorated very rapidly, and that, although they are well-stocked with small fish of fair flavor and quality, Trout are rarely taken of such a size as to remunerate the exertions of a good fisherman. Half a pound may be taken as a *good* average of the fish killed here. In the creek below, where the tide makes, there are, of course, fish, but I never have heard of much work being done in it;

and, in truth, except that this is the first southern pond of any note, I would hardly advise the angler to pause here.

"About a mile and a half farther eastward is a large pond, and a fine house, both recently constructed at a great expense by Judge Jones—the former exclusively designed as a fish-pond. The place has, however, passed out of his hands, and the house is now kept as a hotel by one of the Snedecors. The pond has hitherto been private, but is now open, though with a limitation. It is well-stocked with fish of a fair size. When I was last there, a fortnight since, a gentleman had taken eight fish, weighing as many pounds, with the fly that morning. The largest did not exceed a pound and a half, but they were handsome, clean, well-fed fish, and, as the day was anything but propitious, easterly wind, and very raw and cold, I considered it fair sport. He had not been fishing above a couple of hours. I understand, however, that there are many Pike in this pond, and in the stream that supplies it; and I much fear that this must ultimately prove destructive to all the fish in the water, although those resident on the spot assert that the Pike never grows in that region to above half a pound, and rarely to that weight, and that little, if any, detriment is observed to arise from his presence.

"This, however, I cannot believe, for the growth of the Pike is usually almost as rapid as his voracity is excessive; and I am aware of many instances, both in the United States and in England, where ponds and streams, excellently stocked with Trout, have been utterly devastated and rendered worthless by the introduction of this shark of the fresh waters.

"The house is well-kept, as is almost invariably the case on Long Island; and I have no doubt that the angler may pass some days here with pleasure.

"Some miles beyond this, still keeping the southside road, we come to Babylon, where there is an excellent house, under the management of Mr. Concklin, of whom all accommodation may be obtained, both as regards fowl-shooting in the bays and Trout-fishing in the neighborhood. There are several ponds and streams more or less well-stocked in this vicinity, but none of any particular note, either for the size or flavor of the fish.

"Such, however, is not the case with the next station at which we

arrive, Liff. Snedecor's—in whose pond the fish run to a larger size than in any water we have yet noted. The Trout here, both in the pond and in the stream below, are noted for their great beauty, both of form and color; and although there is some debate among connoisseurs as to the comparative flavor of Snedecor's fish and those taken at Carman's, eighteen miles further east, the judgment of the best sportsmen inclines to the former.

"The pond is of the same character with those which I have described heretofore, and can be fished only from boats. It is open to all anglers, but the number of fish to be basketed by each person in one day is limited to a dozen. In the stream there is no limit, nor indeed can there be, as the tide-waters cannot be preserved, or the free right of fishing them prohibited. The Trout here are not only very numerous and of the first quality of excellence—their flesh being redder than that of the Salmon—but very large; the average probably exceeds a pound, and fish of two and two and a half pounds' weight are taken so frequently as to be no rarity.

"The outlet of this pond, after running a few hundred yards, opens upon the salt meadows, where there is no obstacle whatever to throwing a long line. It is broader and longer than any stream we have hitherto encountered, and is incomparably the best, containing fish even larger than those of the pond above, and, in my opinion, of a finer flavor. I believe it, indeed, to be an indisputable fact, that Trout, which have access to salt water, are invariably more highly colored and flavored than those which are confined to fresh streams by natural or artificial obstacles.

"There is no distinction, of which I am aware, in favor of pond or stream, for the use of the fly, the fish taking it readily in either, although as a general rule they will rise to it earlier in the fresh, than in the tide-water.

"At some distance down this stream there is a range of willows on the bank, nearly opposite to a place owned by Mrs. Ludlow; and under the trees are some holes famous for being the resorts of the largest fish, which affect here the deepest water and the principal channel. Here, as in the pond, fish of two and a half pounds are no rarity, and, in fact, such are taken here more frequently than above I should say that one would rarely hook a Trout in this stream under

one and a half pounds; and the true angler well knows that a well-conditioned fresh-run fish, from this size to a pound larger, on the finest and most delicate tackle, will give him nothing of which to complain in the way of exercise or excitement.

"At a short distance from Snedecor's is another stream, known as Green's Creek, which contains a peculiar and distinct variety of Trout, which is called in that district the Silver Trout. I have not seen this fish, but learn from good sportsmen that it is of a much lighter and more pearly hue than the common Trout, the bright and silvery lustre of the scales prevailing over the back and shoulders. It is crimson spotted, but the fins are less strongly yellow, and it is perhaps a slenderer fish in form. The flesh is said to be firm and well-flavored. The Silver Trout is rarely taken much over or much under a pound in weight, and rises to the fly or takes the bait indiscriminately. This stream has, I know not wherefore, of late years lost much of its celebrity, and is rarely visited by the best sportsmen.

At Patchogue, yet a few miles further, there is a very large pond, which was formerly perhaps the most famous on the island, both for the abundance and the size of the fish which it contained. They have, however, become latterly so scarce, that few persons from a distance think it worth their while to pause there, but proceed at once to Sam Carman's, at Fireplace, eighteen miles eastward from Liff. Snedecor's; these two being in fact the *par excellence* fishing grounds of the Island, and the difference between the two rather a matter of individual prejudice and fancy, than of any real or well-grounded opinion.

"The character of the fishing at Fireplace is nearly similar to that at Islip; the stream flowing from the pond is larger, and contains much larger fish, the most beautiful, both in shape and brightness of color, of any on the island. In this stream, two pounds is a very common size; perhaps, fish are as frequently taken of this weight as under it, and upwards to four pounds. Their flesh is very highly colored, and their flavor, as I have observed before, second to none. Indeed, it is but a few years since Carman's fish were estimated by old sportsmen the *only* fish worth eating; of late, however, fashion—which rules in gastronomic tastes as otherwise—has veered a little in favor of the Islip Trout, and it remains at present a debatable point between the two. The course of Carman's stream lies chiefly through open salt

meadows, and the banks are entirely destitute of covert, so that very careful and delicate fishing is necessary in order to fill a basket. Even with ground bait it is desirable to keep completely out of sight, walking as far from the bank as possible, and to avoid jarring the water, so wary and shy are the larger fish. It is also advisable to fish down wind. Trolling is very successful in this water, the same precautions being taken, and the bait-fish being dropped as lightly on the surface, as if it were a fly, so as to create neither splash nor sound. The pond above is likewise deservedly celebrated, the fish *averaging* at least a pound in weight, and equal in all respects to any pond Trout in this or any other region. The fly-fishing here in season is probably the best on Long Island, although of late, here, as everywhere else, Trout are becoming comparatively few in number; so that it has been found necessary to impose a limit on sportsmen.

"Not many years ago, a celebrated English shot and angler, who has since left this country, and who, I believe, was among the first, if not the very first, to use the fly on Long Island waters, took between forty and fifty good fish in this pond before dinner, and in the afternoon basketed above a dozen of yet larger size in the stream below.

"This feat, the like of which will not, I fear, be soon heard of again, was performed with a fly, the body of which was composed of hare's-ear fur, and the hackle of a woodcock's wings—a very killing fly, be it observed, for all waters, especially early in the season.

"On the same stream with Carman's pond, and at but a short distance above it, is another called Middle Island Pond, with a saw and flour-mill at the outlet, which contains a great number of fish, of very large and very uniform size, running from one and a half to two pounds weight. It is remarkable, however, that the Trout in the lower pond being esteemed the best, those in the upper should be the worst of any taken on the south side of the island. Such, notwithstanding, is the case; they are long, shallow, ill-fed fish, dingy-colored, and woody-flavored. They are not, however, black-mouthed, as are the fish of a pond which I shall have occasion to mention hereafter.

"I remember that a fact of the same sort is recorded of two lakes, I think in the *north* of Ireland, connected by a short stream running through a bog meadow. In the upper of these lakes the fish, as here,

are worthless—in the lower superlative; and they are never known to intermingle. How this should be, cannot well be explained; for, granting that the excellence of the fish arises from the soil and food, and that the inferior fish improves on coming into the superior water, still there must be a transition state.

"With this pond I shall close my notice of the south side waters, merely adding that at Moritches, and yet further east, there are many streams and lakelets abounding in fish, though inferior to those of the waters I have enumerated, both in size and quality; and these are, I believe, all open without limit to all persons who desire to fish them.

"It may be worth while here to mention, for the benefit of strangers, that the houses kept by Snedecor and Carman are by no means country taverns, at which nothing can be obtained, as is often the case in the interior, but hard salt ham and tough hens just slaughtered. Being frequented by gentlemen entirely, they are admirable hotels in every respect.

"I will now turn, for a moment, to the north side, on which there are also many streams containing Trout, but none, with a single exception, which can show size or numbers against the southern waters. That exception is Stump Pond, near Smithtown, now rented to a company of gentlemen, and of course shut to the public in general. The fish in this large sheet of water are very numerous, and very large, but are for the most part ill-shaped, ill-conditioned, and inferior in flavor—long, lank fish, with very large black mouths. I have been informed that in latter years the fish in this water have been gradually improving, but of this I cannot speak from personal experience; it is, however, notorious, that occasionally Trout of very fine quality, both in appearance and flavor, have been caught here; which is somewhat remarkable, inasmuch as the same feeding grounds rarely produce two different qualities of fish.

"With regard to weather, a darkish day, with a moderately brisk breeze, sufficient to make a strong ripple on the water, is the most favorable. It is somewhat singular, that in spite of the generally received opinion that southerly or south-westerly weather is the *only* weather for Trout-fishing, few old Long Island anglers are to be found who cannot state that they have taken as many, some say *more*, fish during the prevalence of easterly winds, as in any weather. A friend

of mine, on whose authority I can perfectly rely, and to whom I gladly record my indebtedness for many facts stated in this paper, assures me that he has never known Trout to take the fly more freely than during a northeasterly snow-storm. Still, I must consider these as exceptions to the general rule; and I at least would select, if I had my choice, 'a southerly wind and a cloudy sky'—always barring thunder—and no objection to a slight sprinkling of warm rain.

"There is another peculiarity to observe in the Long Island waters—and, so far as I know, in them only—that Trout bite decidedly better and more freely, when the water is very fine and clear, than when it is in flood and turbid. Indeed, if there be a good ripple on the surface, the water can hardly be too transparent.

"It has been suggested to me, that this may be accounted for by the fact that in flood the waters are so well filled with natural bait, that the fish become gorged and lazy. I cannot say, however, that this is perfectly satisfactory to me; as the same must be the case, more or less, in all waters; whereas it is unquestionably the case, wherever I have fished, except on Long Island, that Trout are more easily taken in turbid than in fine water.

"As connected with the foregoing remarks, I will here add, that, as a general rule, the minnow, with spinning or trolling tackle, is found to be more killing than ground bait in the ponds, and *vice versa*, in the tide streams—probably from the mere fact that the minnow is the rarer in the one water, the red-worm in the other, and that each by its rarity becomes the greater dainty."

Beyond this I have nothing to add, with respect to Trout-fishing, with the exception of a few very general observations on the most likely times, seasons, and places in which to fish for the Trout, since the mode of taking them with the fly is in all respects the same as that already given under the head of Salmon-fishing, the modes of casting for, striking and playing these kindred fishes being in all respects identical.

In the first place, I am clearly of opinion that for very early fishing in March and April there is no place on this continent at all comparable to Long Island, where all along the south shore they can be taken in numbers almost innumerable, in every pond, stream, and salt creek, until the end of July, when they cease to bite freely. It is

worthy of observation that very early in the season the bait is more killing than the fly, but that from May to the end of the season the fly-fisher will fill his creel when the bait-fisher will go empty-handed home.

In the salt creeks the fish take the fly far less willingly than the bait; and in Carman's Creek, which is very decidedly the best Trout river on Long Island, it is said that there is but one example of a fish being killed with the fly, by an old friend of my own, Mr. Luxford, formerly of H. M.'s Royal Dragoons, in whose eye, should this meet it, these words may awaken not unpleasant reminiscences of his visit to the United States, and of his many, many sporting rambles with Frank Forester.

In Carman's River the largest fish in America are, I think it will be allowed, mostly caught, running often quite up to five lbs. weight, and I fully believe that if it were fished patiently and resolutely, especially at the gray twilight, or in the shimmering moon-shine quite down to the bay, through the salt meadows, with a small Trout on good spinning-tackle with three swivels, or with a very large gaudy fly, sunk by means of a shot to several inches below the surface, fish might be taken of seven or eight pounds weight. After Long Island fishing is nearly at an end, commences, and continues quite until September, that in the crystal streams of the Southern New York counties, in the Pennsylvanian streams, and even later in the waters of the Adirondach Highlands and later yet at the Sault St. Marie.

The Juniata, the Wyoming, the upper Delaware, the upper Alleghany and the upper Susquehannah swarm with fish, as well as all their tributaries. The former rivers, and many another equally fine streams in the Alleghany and Blue ridges, are within easy striking distance of Philadelphia; all the waters of the Delaware and Susquehannah rivers can be reached in a day from New York, by the Morris and Erie railroad; nor is there any lovelier or more romantic region, nor any waters dearer to the angler, than those which are now opened to the world by that noble avenue which is already complete so far as to Owego, and which will soon link with its iron chain, Erie and all the upper lakes to the Atlantic sea-board.

Hamilton County and its splendid fishing-grounds may be reached in many ways from New York, via Albany. From Caldwell's on Lake George, from Lake Champlain by the Saranac, from Schenec-

tady by the Fish-house, and from the St. Lawrence it is accessible to the Canadians by the Black River or the Racket.

These waters abound in the Brook Trout, and the great Lake Trout, whereof a word more hereafter, though he very little merits a word; and good accommodations can now be obtained in many places through that of late inhospitable region; but much of the pleasure of a trip thither is destroyed by the swarms of mosquitoes, and yet worse, of venomous acupuncturing black and sand-flies, which phlebotomize almost beyond endurance the hapless unacclimated stranger who ventures into their demesnes, between May and the latter days of August.

Beyond this I will only add that the haunts of the Brook Trout closely resemble those of the Salmon; that they lie lurking for their passing prey under great stones at the head or tail of swift glancing rapids, in the small deep pools between, beneath the roots of great trees which protrude from banks over swirls and whirlpools, in holes under weirs and sluices, and in no place more frequently than at the tail of mill-races

The best and heaviest fish do not begin to feed until twilight, after which, for about three hours, they are exceedingly voracious, reposing again after that until daybreak is at hand, when they again feed for an hour or two, lying quite still, and oftentimes refusing the most tempting baits during the whole of the day-time

I have been told lately, and see no reason for doubting the accuracy of the information, that great sport may be had by baiting any well-ascertained haunt in a stream with the common Cray-Fish, his shell being cracked to pieces for several days in succession, previous to fishing it with a fly.

From the Brook Trout I pass on to his nearest relations, the various kinds of Lake Trout, Mackinaw Salmon, Siskawitz, and, as it is called erroneously, Salmon Trout of the lakes.

Before closing this article, I have judged it well to quote a few remarks on Trout-fishing, from that admirable work, Hofland's Angler's Manual, inasmuch as they are in the highest degree appropriate to the Trout-fishing of America generally, while the observation on bush-fishing, dipping or dapping, will be found of great advantage to the angler for small Trout in the beautiful tumbling mountain-streams far inland, in our northern and north-eastern States.

"THE ARTIFICIAL FLY.

"Fly-fishing is certainly the most gentlemanly and pleasant kind of angling, and it has many advantages over every other mode of fishing. In the first place, your apparatus is light and portable; for a slight rod, twelve feet long—or if wanted for a narrow and wooded stream, one of ten feet only would be more convenient—a reel containing thirty yards of line, a book of artificial flies, and a landing-net, and you are fully equipped for the sport. In the second place, it is the most cleanly and the least cruel mode of angling, as you are not obliged to soil your hands by ground bait, or live baits, nor to torture a living fish, or insect, on your hook. Another charm in fly-fishing is, that you are never fixed to one spot, but continue to rove along the banks of the stream, enjoying, in your devious path, all the varieties of its scenery; the exercise induced is constant, and not too violent, and is equally conducive to health and pleasure. I have already said that a one-handed rod should be ten or twelve feet long, and a two-handed rod from sixteen to eighteen feet; to either of which must be attached a reel containing thirty yards of twisted silk and hair line, tapering from a moderate thickness to a few hairs, at the end of which you are, by a loop, to attach the bottom tackle. This should be made of round, even gut, and three yards long; some persons prefer four yards; but I think too great a length of gut increases the difficulty in casting the line. Those bottom tackles may be purchased at the shops in two, three, or four-yard lengths. These lines should also taper gradually, the gut being much stronger at the end which is to be attached to the line on the reel, than at the end to which the stretcher-fly is to be fixed. When you fish with only two flies, the second—or drop-fly—should be at a distance of thirty-six or forty inches from the bottom, or stretcher-fly; but, if you use three flies, the first drop should be only thirty-four inches from the stretcher, and the second drop thirty inches from the first. These drop-flies are attached to the line by loops, and should not be more than three inches long; and, by having the gut rather stronger than for the end-fly, they will stand nearly at a right angle from the line. I recommend the beginner to commence with one fly only; but, at most, he must not use more than two; and, as for his mode of casting, or

throwing his fly, now his tackle is prepared, I fear little useful instruction can be given, as skill and dexterity, in this point, must depend upon practice. I may, however, advise him not to attempt to cast a long line at first, but to try his strength, and gain facility by degrees. He must make up his mind to hear many a crack, like a coachman's whip, and find the consequent loss of his flies, before he can direct his stretcher to a given point, and let it fall on the water lightly as a gossamer. When I come to speak of the different Trout streams in the neighborhood of London, and elsewhere, I shall recommend the flies to be used for the place and season; in the meantime, I shall attempt to describe the haunts of the Trout.

"He is fond of swift, clear streams, running over chalky, limestone, or gravelly bottoms; but he is more frequently in the eddies, by the side of the stream, than in the midst of it. A mill-tail is a favorite haunt of the Trout, for he finds protection under the apron, which is generally hollow, and has the advantage of being in the eddy, by the side of the mill-race, awaiting his food. He delights also in cascades, tumbling bays, and wiers. The larger Trout generally have their hold under roots of over-hanging trees, and beneath hollow banks, in the deepest parts of the river. The junction of little rapids, formed by water passing round an obstruction, in the midst of the general current, is a likely point at which to raise a Trout; also at the roots of trees, or in other places where the froth of the stream collects. All such places are favorable for sport, as insects follow the same course as the bubbles, and are there sought by the fish. After sunset, in summer, the large fish leave their haunts, and may be found on the scowers, and at the tails of streams; and during this time, so long as the angler can see his fly on the water, he may expect sport. Unfortunately, when the deepening shades of twilight drive the sportsman home, he is succeeded, on dark nights, by the poacher, with his night-lines; and, I am sorry to say, that the north-country angler gives too faithful a picture of this night-fishing, which he himself practised.

"And now, having told the young angler where to search for fish, I must strongly impress upon him the necessity of keeping out of sight of the fish, for, if once seen, not any kind of bait he can offer will tempt a Trout to take it; therefore, approach the stream with

caution, keeping as far from it as possible: first, fish the side nearest to you, and then cast your line so as to drop just under the bank on the opposite side of the stream, drawing it, by gentle snatches, towards you, always continuing careful to show yourself as little as possible.

"Some persons recommend fishing up stream, and throwing the fly before them; others walk down the river, and cast the fly before them. For my own part—after much experience—whenever I can do so with convenience, I cast my fly a little above me, and across the stream, drawing it gently towards me. If the wind should be against you, you will be constrained to stand close to the water's edge, and make your cast close to the bank on which you stand, either up or down the stream, as the wind may serve. Avoid, if possible, fishing with the sun behind you, as the moving shadow of yourself and rod will alarm the fish. The finer the tackle—particularly the bottom tackle—and the lighter the fly falls on the water, the greater will be your sport; indeed, some anglers use only a single hair for their bottom tackle; but when the water you fish is weedy, or much wooded, a single hair is very difficult to manage; but in ponds, or streams, free from impediments, it may be used by a skilful hand with great advantage. The winds most favorable to the angler are south, southeast, southwest, and northwest; but in March and April this latter wind is generally too cold. A fresh breeze is favorable, especially for lake-fishing, mill-dams, or the still deeps of rivers; as the ripple on the water, caused by the breeze, has the same effect as a rapid stream, in preventing the sharp-sighted Trout from discovering the deception of the artificial fly.

"In lake-fishing you can hardly have too much wind, if you can manage your boat comfortably, and keep your fly on the water. There are very few lakes, with which I am acquainted, where good sport can be had from the shore; to ensure success, a boat is indispensable; and if you can procure a boatman well acquainted with the water, and the management of his boat, the battle is half won. After sunset the fish seek the shallow water, and a lake may then be fished from the shore. I have found, from long experience in lake-fishing, that it is better to cast your line towards the shore, rather than from the shore, or up or down the lake. The boat should be maintained,

as far as possible, at a proper distance from the shore—that is, so that your flies may fall where the water begins to deepen from the shore. The boat should be allowed to drift with the wind, and the oars used as seldom as possible, and merely to keep it in a proper position and distance from the shore. The flies used in lake-fishing are larger than those for rivers; and I have frequently observed that the winged flies answer better than palmers. Perhaps the cause of this may be, that many rivers and small Trout streams are bordered with trees, which overhang them, and from which drop the insects that the palmers imitate; whereas the shores of the lake are generally rocky, or stony, and mostly denuded of trees, and consequently do not produce this kind of food for their finny inhabitants."

"BUSH-FISHING, DIBBING, OR DAPING.

"One great recommendation to bush-fishing is, that it can be practised with success in the months of June, July, and August, when the river is low, and the sunshine bright, and in the middle of the day; at a time and season when no other circumstance would stir a fish, the largest Trout are taken by this method. The angler must be provided with a fourteen-feet rod, with a stiff top, and strong running tackle; he will seldom have to use more than a yard of line, the bottom of which should be of strong silkworm gut. I recommend strong tackle, because, in confined situations, overhung with wood, you will not have room to play your fish, but must hold him tight, and depend on the strength of the tackle.

"The size of your hook must depend on the size of your fly, from No. 7 to 9 for small flies and grubs, and, for beetles, No. 4 or 5. For bush-fishing, you should be provided with well-scoured brandlings and red worm, cad-baits, clock-baits, earth-grubs, beetles, grasshoppers, and a horn of flies, or, at least, as many of the above as you can procure. A small green grub, or caterpillar, which may be got in June and July, by shaking, over a sheet or tablecloth, the boughs of an oak-tree, is a most killing bait for this kind of fishing.

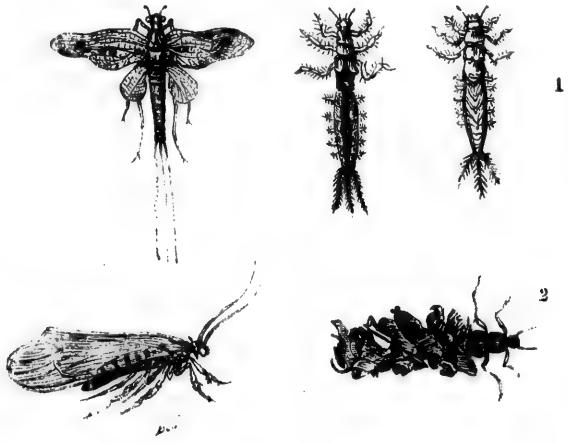
"Great caution is necessary in using your rod and line; for, if there are few bushes or brambles to conceal you, the water must be approached warily, as the large Trout often lie near the surface, and,

if you are once seen, they will fly from you If the water should be deep, dark, and overhung with thick foliage, so that you can scarcely find an open space for your bait, your line must be shortened to half a yard, and sometimes less.

"If your flies are small, use two of them at once, as they frequently fall into the water in couples; when daping with the fly, if you see your fish, drop the fly gently on to the water, about a foot before him, and if you are not seen, he will eagerly take it. When your fish is struck, do not allow him to get down his head, for fear of roots and weeds, but keep him to the top of the water, where his fins and strength will be of little use to him; and in this situation, with good tackle, you may soon exhaust him, and make him your own by a landing-net, the handle of which should be two yards long; or he may be landed by a hook or gaff, with a long handle; and this, in some situations, amidst close, thorny brambles, will be found more useful than a landing-net, which is liable to be caught in the bushes.

"When you use the worm, the caddis, or any other grub, you will require a single shot, No. 6, to sink your bait, for it cannot sink too slowly, or cause too little disturbance in the water."

No. 1. Mayflies, perfect, and embryo.
No. 2. Stonefly, perfect, and embryo.



LAKE TROUT FISHING.

These great, bad, coarse and unsporting fish, of all the three varieties, are very nearly similar in their habits, lying for the most part in the deepest parts of the great lakes, seeking their food in the depths, and very rarely rising to the surface, either for food or play. Of these the great Mackinaw Salmon is perhaps the liveliest, and the common Lake Trout, *Salmo Confinis*, of DeKay, the heaviest and most worthless.

They will scarce ever rise to a fly, and can rarely be taken even with a spinning minnow; with a live bait, however, or a peacock-fly, submerged to a considerable depth, with a bullet at the end of two hundred yards of line, played from a stiff rod at the stern of a light skiff or canoe moved rapidly through the water by sails or oars, they can be caught with considerable certainty. When hooked, however, they are but a heavy, torpid fish, bearing down with a sullen dead weight, and offering little more than a passive resistance. My friend William T. Porter, who constantly fishes in the waters of Hamilton county, informs me that he has been exceedingly and almost invariably successful with what seems a very strange and unsporting combination, a small fish namely, and a large fly on the same line, at about a yard's distance asunder.

The commonest way, by far, of angling for the common Lake Trout is with a stout drop-line and a Cod-hook baited with a piece of salt pork, or the belly of a Yellow Pearch or Brook Trout let down into ten or fifteen fathom water. The fish bites, gorges his bait, for which you may allow him a few seconds' time, after which he is hauled in by main force. He is very indifferent eating, but perhaps the best way of preparing him when quite fresh out of water, is to crimp him to the bone after stunnning him with a heavy blow on the head, wrap him up in a cover of thick greased paper, and roast him without removing the

entrails, which will come away at a touch when he is cooked, under the ashes of a wood fire.

The greatest Mackinaw Salmon, or Namaycush, and the Masamacush, or Arctic Charr, the latter a delicious and very voracious fish, are both taken in the same manner, in very deep water, in the summer, and through holes cut in the ice in the dead of winter. The favorite bait for both these fishes, is the belly of the yellow or gray sucking Carp, or a piece of the raw heart or liver of a deer.

The Mackinaw fish is, however, a far bolder fish than any of his race, and occasionally follows any shining bait or squid up to the very surface of the water, if it is sunk by means of a weight, and then trolled sharply upward and onward to the surface. A piece of bright tin, with a rag of scarlet cloth attached to it, is, I am informed, found to be very successful and killing in the hands of the Indians. If this be the case, of which I am well assured, there can be little or no doubt that the deadly spoon, as it is called, an implement shaped precisely like the bowl of a table spoon, of bright metal, silver-washed within, and brazed without, attached by a swivel at the lower extremity to a stout triple hook, and at the upper to a piece of strong gimp—which is so murderously destructive to the Black Bass of the St. Lawrence and the Mascalonge—would be found no less effective with the great Lake Trout; nor if any one should think it worth the while, would any harm be thought of his applying any invention, however slaughtering and poacher-like, to so base and caitiff a fish as the Lake Salmon.

Of Back's Grayling it is almost unnecessary here to speak, so far north are his customary haunts, and so very difficult and expensive is it to reach the districts in which only he exists. This is the more to be regretted for that he is one of the finest, if not the very finest, of all the sporting fishes of America. He is the boldest of biters at a fly, taking all those flies which are most preferred by the Brook Trout, leaping many times out of the water in his efforts to extricate himself from the hook, nor ever succumbing to his captor's will without a desperate resistance and a severe conflict. His flesh is no less delicious, and his excellence at the board in no wise inferior to his spirit, or the beauty of his coloring.

Of the Attihawmeg or White-Fish of the great lakes, of the Otsego Bass, or as I should desire to have it hereafter called, the Otsego La-

varet, and of the little Smelt, which are all members of this same noble family, it needs not to make farther mention. They all have been occasionally taken with the fly, and will all undoubtedly be oftentimes again so captured, but the certainty of their rising is by no means sufficient to warrant the fisherman in wasting much time in their pursuit.

I may here, before finishing this head of my subject, observe that in fact there is scarcely any fish which will not, apparently from some whim or other, take the fly on the surface. I have myself so caught the Striped Bass, the Shad, the Herring and the Northern Pickerel with the Salmon-fly. All the family of the small *Cyprinidæ*, as the Roach, Dace, Bream and Chub, will at times bite freely. In the Black River a species of this family rises very freely, and gives good sport. It is there called the Chub, and is, I believe, identical with another of the same division, known as the Wind-Fish in some of the streams of Duchess County, in the State of New York; and a thoroughly good fisherman of the city informed me yesterday that he had even caught Suckers with a Trout-fly, a fact, which but for the very great respectability of the source whence I derived the information, I should hardly have been inclined to credit.

None of these unimportant little fish, however, give sport enough, or are sufficiently good on the table, to make them worthy the pursuit of others than boys, snobs, and the ladies, who must pardon me for the company into which I have introduced them, certainly not according to their merits, on my estimation of them.

Note to Revised Edition.—See Supplement, article Lake Trout, for some altered views and farther instructions in regard to the tackle and mode of taking this fish. I am more than ever satisfied that there are two distinct Lake Trouts in the New England and New York waters, apart from the Namaycush or Mackinaw Trout, and the Siskawitz.

SALMON TROUT FISHING.

THERE is but one region on this continent in which this admirable sport can be enjoyed at all; for, singular to say, the fish is found only in those rivers of New Brunswick which flow eastwardly into the Gulf of St. Lawrence, and the Bays of Gaspè and Chaleurs.

As if to make amends, however, for the narrow limits of their geographical range, they absolutely swarm, during their season, in all the rivers which they frequent, traversing the sea bays in enormous schulls, and running up all the rivers to the head of tide water, beyond which they do not ascend on these coasts. Why this should be the case it is not easy to conjecture, since it would appear to indicate a variation in the species from one of the normal habits of the race—that, I mean, which dictates to the parent fish that they must run up into the aërated waters of pure fresh rivers, in order to deposit their ova.

It may be, though I am not prepared to state that it is, the fact, that the ascent of all these rivers beyond a certain point is rendered impossible to the fish, by long rapids, or impassable cataracts, and that, perceiving the impossibility of arriving at the place of their proper and natural destination, the fish themselves cease to attempt it, and merely run up from the brackish into the fresh water, in order to enjoy those alternations of temperature and food, in which all this family would appear especially to rejoice.

In the Scottish and English waters, the Salmon Trout, like the true Salmon, ascend quite to the head waters of the streams which they frequent, and deposit their ova precisely in the same manner as the other of their congeners. Here, it is evident, from Mr. Perley's reports to the British Parliament on the Fisheries of the Province, that they do nothing of the kind.

In the St. Lawrence, I have never heard of their being taken above Montreal, and rarely above Quebec, although there is no obstruction of

any sort to hinder their running quite up to the mouth of Niagara, as is the case with the true Salmon.

One thing, however, it may be observed in this connexion, is very evident—that we know, comparatively speaking, almost nothing of the nature of fishes' instincts.

That they possess exceedingly tenacious memories, I cannot in the least doubt; and I have more almost than strong suspicion that these memories became hereditary, and are so transmitted from generation to generation.

In no other way can we account for that extraordinary instinct which leads back the young bird to the nest in which it was hatched, the grilse to the river in which it had its birth—since the young birds are deserted by their parents at a period long antecedent to their return from their migration, and the fish never have the protection of their progenitors.

Nor in any other way can we explain the fact that the true Salmon never enter the Niagara River, although they run quite up to its mouth; even if we admit that its waters are entirely unfitted for the purposes of the fish, and that it contains no shoals suited for spawning-grounds; for otherwise, we should expect that every individual fish would visit it at least once, in order to get a taste of its quality, and then finding it unsuitable, desert it; whereas it is not on record that any fish has ever been taken of this species within its embouchure.

It may be that this wonderful power is an especial gift of Providence, preventing the fish from wasting too much time in seeking out a haunt, and so losing the season for the propagation of its species, by conducting it truly, as the needle to the magnetic pole, to the stream in which it was bred.

Be this, however, as it may, certain it is that in all the rivers which flow eastwardly from the Provinces into the Northern Atlantic, with every flood-tide a horde of these beautiful fishes run up until they strike the junction of the salt and fresh water, usually at the foot of a fall or rapid, and there remain disporting themselves in the bright eddies, and throwing themselves quite out of their native element, in pursuit of their scaly prey.

In these places they will take very greedily any of the Scottish or Irish gaudy lake-flies, leaping out of the water to take and seize them,

and rising so voraciously and rapidly, that it is found impossible to fish with above one, or at the most, two flies; as it is not at all an unusual thing, if fishing with three, to hook at the same moment three several fishes.

In the Obscaché, several years since, Mr. Perley, who visited those waters in his official capacity, accompanied by Capt. Egerton, of H. M. 43d Light Infantry, killed three hundred of these fine fish at the junction of the fresh and salt water, at the foot of a long glancing rapid, in a single tide; and the former gentleman writes me word, that one morning last season he killed, in an hour or two, eight fish, which weighed forty pounds.

This must be regarded, however, as an unusual run of luck; for the average size of the Salmon Trout does not appear to exceed four pounds, although they are taken up to seven and eight.

In the fresh water, within the rivers, they are taken exactly as the Salmon, or Brook Trout, with a double or single-handed rod indifferently, and with any of the baits or flies which are killing to the others of the family; but best of all, with a scarlet Ibis fly, with a gold tinsel body, which it prefers even in bright water, to the best peacock herl and gay feather lake-flies. Although a fine game fish, a strong fighter, and hard dier, the Salmon Trout often comes in for a share of the Salmon fisher's maledictions, jumping incessantly at the deceits intended to fascinate a larger and more potent victor, and in fact, for insisting on being taken in lieu of its great congener.

In the sea bays, quite out of sight of land, while roving along the coasts, in search probably of its favorite estuary, the Salmon Trout is caught nearly as we catch Mackerel or Blue Fish, by trolling with the Ibis fly, above described, at the end of thirty or forty yards of line, from the stern of a sailing-boat, under all canvass, in a stiff Mackerel breeze.

For this sport it is necessary to use a reel, with not less than a hundred yards of line—as the largest fish are taken by this method, and make a very violent resistance before they can be brought home.

The fly is kept skipping from wave to wave, as the boat lavcers, or beats to windward, and the fish throwing itself out of the sea to secure it with its beautiful bright sides flashing like virgin silver in the sunlight, and when struck, constantly dashing away with the whole of the

line from the whizzing reel, and giving a long run down wind, there is perhaps no sport in existence more full of pleasant excitement and adventure.

Nor when taken is the prisoner unworthy of the pains it has cost to kill him ; for although smaller, he is in all other respects nearly of equal excellence with the true Salmon, and occupies a place second to him alone, with the judicious epicure.

Right well would it repay some of our gallant yachters, to turn the heads of their tight crafts easterly, and bear away, as the old song has it, with a wet sheet and a flowing sail, for the rock-bound shores of Nova Scotia and New Brunswick, for once there, right hospitable would they find their welcome, and their sport right royal.

PICKEREL FISHING.

From the gigantic Mascalonge and its nearly equal congener, the great Northern Pickerel, to the small barred variety, which is found only in the waters of Long Island, the whole of this fierce and voracious family affords great sport to the fresh-water angler ; and where the Trout and Salmon do not obtain, they are considered as the kings of the waters. There are many modes of fishing for them, and the baits which they will take are almost innumerable, comprehending in their range almost the whole animal creation, fish, flesh, fowl and reptile.

When of great size they are excessively destructive—not to other fish only, of which they are the tyrants, but to frogs, water-rats, and even the young of wild-fowl.

They are taken either with trimmers, that is to say, small floating buoys with a rude reel attached, and a dependent live bait, with long set-lines ; or again, by roving with the live, or trolling with the dead bait. In the former mode, it is the better way to use two moderate-sized hooks, one passed through the lip, and the other through the dorsal fin of the bait, which should be sunk about two feet below the surface, with a large float on the line, and suffered to swim about at his pleasure.

By this method, however, large Pearch are often taken instead of the proper fish, and trolling with the gorge-hook, or fishing with the snap-hook is by far better sport—especially the former—more legitimate, more exciting, and last, not least, more killing.

Of these methods, Mr. Hofland, in his British Angler's Manual, thus discourses—and although he is speaking of the English Pike, *Esox Lucius*, not of the Mascalonge or Pickerel, as the fishes are of the same family, and the modes to be pursued in capturing them in all respects identical, I have not hesitated to extract his able and well-written description ; I must premise, however, that where he speaks

of Dace, Bleak or Gudgeon for bait, we must substitute the Roach, the Minnow, the small Bream, the New York Shiner, or, which is decidedly the best and most killing of all, the young fry, or Parr, of the Brook Trout.

Like Mr. Hofland, I infinitely prefer trolling with the gorge-hook, a representation of which is annexed below, to fishing either with the common snap, or with what is here called the sockdollager-hook; which last I regard as a great and dangerous humbug.

The rod for Pike-trolling is well described below by Mr. Hofland, but one of Conroy's best general rods with spare tops—which is, in fact, the best for everything except fly-fishing, such as is used for Bass or Weak-Fish though with rather a stronger or stiffer top—will be found all-sufficient. In my opinion, a large click-reel, such as we use for Salmon, and a stout silken line of a hundred yards or better, will be found preferable to the contrivances of which Mr. Hofland discourses.

In casting the bait, the butt of the rod should be set against the right hip, with the point inclined to the left; the bait should hang at the end of some ten or fifteen yards of line, and as many more should be drawn off the reel and held loosely in the left hand, the right hand grasping the butt about a yard above its extremity.

The body should then be turned slowly to the left, and brought round again, with a quick jerk, to its original position; the rod, as described before, will follow the same motion, and deliver its bait with great velocity and accuracy, the left hand playing out the line and checking its motion gently, so as to drop the bait upon the surface almost without creating a ripple, certainly without a splash.

A little practice will soon enable the merest tyro to deliver a dead bait on a leaded gorge into the circumference of his hat at twenty-five or thirty yards; and let him remember, that the longer his casts, the better and more like to kill.

The bait, after being cast, should be drawn gently and gradually home, the left hand constantly giving out and retracting the line; which, with the aid of one or two swivels above the gimp arming of the gorge-hook, will cause the fish to spin and glance beautifully in the water, and will render it a most attractive bait.

Hofland's instructions for striking and playing this fine fish cannot

be surpassed; and paying due attention to the above, and giving heed to his instructions, the young angler will hardly fail of sport in any of the inland lakes or rivers of this country from Maine to Lake Superior and La Belle Riviere, as the French designate the Ohio, and from the Atlantic coasts to the Arctic Circle.

"I must here inform the novice in trolling, that little sport can be expected without a tolerably clear water.

"Nobbs, the father of the art of trolling, speaks of April and May as the best months; but, with due deference to so great an authority, I should say September, October, and November, are the best months, as the fish are then in prime season, and are worth taking, whereas in April and May they have not recovered from spawning, and although they may feed freely, they will be lank and thin, and in bad condition.

"Early in March the Pike are often taken full of spawn, but at this season they will seldom gorge the bait, and are generally taken by the snap. In the autumn, rivers and ponds begin to lose their weeds, which, in spring and summer, are so troublesome to the troller, and the fish then take to the deep holes, and their haunts are more easily found. The troller cannot be too early or too late at his sport, for during the middle of the day the fish seldom feed, unless it be cloudy and the breeze fresh.

"The best baits for Jack and Pike are Roach, Dace, Bleak, Gudgeon, Minnow, small Chub, and Trout, or the Skegger or Brandling; when none of these can be procured, a small Perch, by cutting away the back fin, may be used. Indeed, in the lakes of Derwentwater and Bassenthwaite, and various places where other fish are scarce, and the small Bass or Perch plentiful, it is the bait in general use. It is of the utmost consequence that the baits should be perfectly fresh and sweet; although a Pike might run at a stale bait, he will rarely pouch it, even at the snap: your baits cannot be too bright or fresh.

"Many writers have recommended birds, mice, frogs, &c., as baits, but where small fish can be procured, no other will be wanted: of all the baits mentioned, I prefer a moderate-sized Gudgeon, more especially for the gorge-hook, as the sweetness of the fish makes the Pike more eager to pouch it.

"On a dark day, and when the water is not very clear, I should prefer a clean, bright, small Roach, Dace or Bleak, particularly when fishing at the snap. When your fish are not kept alive in a bait-can, they should be carried in a tin box, and laid in a little fine bran, or pollard, and carefully washed before you bait with them.

"TROLLING TACKLE.

"The rod should be of strong bamboo cane, and from ten to twelve feet long, with a tolerably stiff top of whalebone or hickory; the rings should be five in number and not less than three-eighths of an inch diameter in the opening, that the line may run freely.

"A strong winch will be required, which must hold at least forty yards of line, that is not subject to kink. Mr. Jesse recommends a trolling-line sold by Mr. Barth, of Cockspur-street, and I have seen a very good sort of line for this purpose, manufactured by Mr. Bazin, Duncan-place, Hackney. Some trollers prefer a rod twenty feet long, in which case your cast on the water is made in the same manner as in spinning the minnow for Trout, but with a longer line; and the lighter your bait falls upon the water the greater your success. Mr. Jesse strongly recommends the use of a wooden reel, one of about four inches and a half across, having the rim grooved for the reception of the line.

"'These reels turn round with great rapidity when the cast is made, letting out a sufficient length of line, and are wound up again by turning them with the fore-finger. They are much to be preferred to the common brass reel, especially in fishing from a boat; they avoid the noise and much of the trouble of winding up, and the line never kinks.'

"A reel similar to this is used by salmon-fishers in Scotland, and is there called a pirn. It will require much practice to enable the novice to cast a long line when the river is wide, but in small streams he will find little difficulty. Some anglers prefer fishing with the gorge-hooks, others with snap-hooks; but my own experience induces me to prefer the former as the best general mode of trolling; and this kind of fishing I shall first describe.

"THE GORGE-HOOK.

"Is either a double or single hook, fixed on twisted brass wire, and loaded on the shank with lead, to which is attached a piece of gimp, eight or ten inches long, at the end of which is a small loop. To bait this hook you must have a brass needle, about seven inches long; put the loop of the gimp on the eye, or small curve, of the needle; then put the point of the needle in at the mouth of the fish, and bring it out at his tail; bring the gimp and wire along with it, the lead being fixed in the belly of the bait-fish, and the hook or hooks lying close to the outside of his mouth; then turn the points of the hooks towards his eyes, if a double hook, but if a single one, directly in a line with his belly; next tie the fish's tail to the arming wire very neatly, with strong thread. To the line on your reel you must attach a gimp-trace, twenty-four inches long, having a swivel at each end, and one in the middle. The spring swivel, at the end of your line, is to be hooked on the loop of your baited trace, and you are ready for sport.

"When you are thus prepared, drop in your bait lightly before you, then cast it on each side, and let the third throw be across the river, or as far as you can reach—still letting the bait fall lightly on the water. In each case let your bait fall nearly to the bottom; then draw it up gently towards you, and again let it sink and rise till you draw it out of the water for another cast.

"I have before named the favorite haunts of the Pike, but when you are in a good water you should carefully fish every part of it, for you may often have a run where you least expect it:—weeds are a great annoyance to the troller, and he will often bruise his bait, and injure his tackle, unless he is very cautious. At every new cast be careful to examine the bait, and clear it from leaves and weeds, as the Pike is very dainty, and will not touch a soiled bait.

"The farther you throw your bait, if the water be broad—provided always that it falls lightly—the greater your chance of success, so that you are not interrupted by weeds, roots of trees, &c.; and if the water should be very weedy, you will be compelled to drop your bait into deep clear openings.

"When you feel a run, let your line be perfectly free, and allow

the fish to make for his haunt without check ; and when he stops give out a little slack line. By your watch, give him ten minutes to pouch the bait before you strike, which you may then do, by first gently drawing in your slack line, and then striking gently; but should your fish move soon after he has been to his haunt, give him line, and he will stop again ; but after this, if he move a second time before the ten minutes are expired, strike, and you will most likely secure him ; but if he has only been playing with the bait, you will have lost him.

" When I have been so served once or twice, I generally resort to my snap-tackle.

" If you have fairly hooked your fish, he cannot easily break away, and as your tackle is strong, unless he is very large, you need not give out much line, but hold him fast, and clear of the weeds ; giving him but a short struggle for his life. The gaff is better than a net for landing a large Pike, for he is dangerous to handle, and his bite is much to be dreaded.

" When you are without either gaff or landing-net, seize the fish by putting your finger and thumb into his eyes. Half a dozen gorge-hooks may be carried in a tin box, with a little bran, ready baited, which will generally serve for a morning's sport.

" ANGLING AT THE SNAP.

" I shall first describe the old fashioned mode, although it is now rarely practised.

" The spring-snap was formerly much in use, and may be purchased at any of the tackle shops. It consists of three hooks, the upper one small, and the two lower hooks large. The spring confines the lower hooks, but the spring gives way, and the hooks spread out when the fish is struck, and hold him securely.

" It is baited by introducing the point of the small hook under the skin of the bait, on the side, and bringing it out at the back fin. Mr. Salter gives the following directions for the double hook-snap, which may be used either with a dead or live bait :

" ' This snap-hook is a double hook, or two single hooks, No. 6, tied back to back, on gimp ; to bait this snap, use the baiting-needle, having first placed the loop of the gimp to which the hooks are tied

in the eye of the needle. Enter the point of the needle just above the gills of the fish, near the back, avoiding to pierce the flesh as much as possible, as it is only intended that the gimp should lie just behind the skin. Bring the needle and the loop of the gimp out near the tail, and draw till the hooks lie close to the part your needle entered, and are somewhat hid by the gills. The bait will live a long time after being thus hooked, and may be used in fishing with a float, by putting three swan shots on the gimp to keep it down :—always prefer a Gudgeon for this baiting. I call this a snap, because, when fishing this way for Jack, I strike immediately I perceive a run, and have met great success this way of snap-fishing. This snap may be baited with dead fish, and trolled with.'

"Although I have quoted this mode of keeping a bait 'a long time alive on the hook,' I by no means recommend the practice to my young brothers of the angle, for I have long confined myself to the use of the dead bait; and with the gorge-hook, and the snap used in the manner I am about to describe, the Pike-fisher will never want sport in a well-stored water.

"I have before said, that by spinning the Minnow with the same kind of tackle as that used in spinning the Bleak for Thames Trout, I have taken many Jack, Pearch, and Trout; but I have also frequently lost my tackle, by the gut being bitten through by the sharp teeth of the Pike. To remedy this evil, gimp may be employed instead of gut; indeed, the snap-tackle now generally sold at the shops is of this description, but with larger hooks than I use, and coarser gimp.

"The angler must now make his casts in the manner recommended in trolling with the gorge-hook, letting the bait partly sink, and then drawing it towards him by gentle touches, by which means the bait will spin freely, and look bright and glittering in the water. When you feel or see a bite, let the fish turn, and then strike gently, but still with sufficient quickness and force to make your hooks hold; and now, with patience and perseverance added to these instructions, a complete disregard of cold and wind, and a determination never to lose his temper at trifling disappointments, the tyro may soon become a master."

The best waters for Pickerel of all kinds are deep, slow, sullen,

shadowy streams, with dark, creeping waters, and shores fringed with Pickerel-weed, water-lilies, and marsh grass; and the best places in which to cast for them are the edges and openings of the floating weed-patches, under the cover of which they are wont to lie expecting their prey.

When the fish has taken the bait, the great thing is to give him time enough to gorge it, and not to mar all by impatience in striking before it is time. Once hooked, a steady hand, and cool temper, will soon ensure his capture; for though he is strong and fierce, his boldness and incautious way of biting permits the use of very strong tackle; and though he fights hard for a while, he has neither the arrowy rush nor the innumerable artful resources of the true Salmon.

Pickerel fishing with trimmers on large lakes, as described under the head of Eel fishing, is by no means bad sport; and if several large fish chance, as is very often the case, to be hooked at once, the sinking and reappearance of the gaily-painted buoys, and their rapid motion through the water as the terrified fish rush away with them, offer an amusing spectacle, while the rapid chase with swiftly-rowed boats is full of gay excitement.

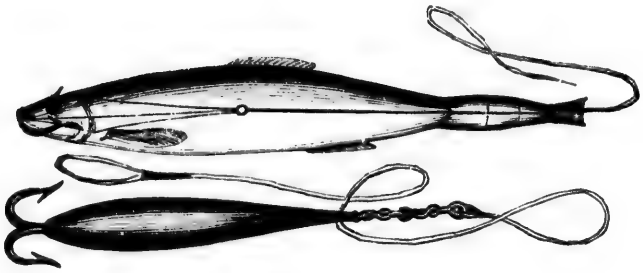
For this sport all the limpid ponds and lakelets of this abundantly-watered land are most admirably adapted, from the farthest regions of New England through all the Eastern States to the fine inland lakes of Northern Pennsylvania. But to enjoy this sport, or that of trolling, in perfection, the angler should visit the Great Lakes and the streams of the great basin of St. Lawrence, and that stupendous river itself; in which, from the Thousand Islands, among which swarm both the Mascalonge and the Great Northern Pickerel, up to the farthest tributaries of Lake Superior, he will find sport, how gluttonous soever he may be of killing, which will not disappoint his wildest wishes.

In the same manner as the Pike is the Pike-Pearch or Sandre, *Lucioperca Americana*, erroneously called the Ohio Salmon, and other absurd provincial nicknames, which is a very fine and delicate fish, as well as a very sporting one, to be taken.

In the western waters he is the most abundant, and his favorite haunts are the tails of mill-races and whirling eddies under shady banks.

Him shall you surely take by trolling with the Shiner or bottom-fishing with the fresh-water Cray-Fish; nor will you despise him taken and smoking on your board.

The Black Bass and the Rock Bass, and the large Yellow Pearch may also be taken by trolling; but there are for these fish other and more appropriate methods, of which I shall treat under their proper heads.



PEARCH FISHING.

In every pond and river of America is this fish found, and none of the smaller and less vigorous biters are greater favorites with the angler.

There is, in my opinion, but one distinct species of the Yellow Pearch in America, although there are several strongly-marked, but I think casual varieties. In the salt-water bays, however, and the estuaries of tide rivers, there are two small and distinct species of the Bass, the little White Bass, *Labrax Pallidus*, and the Ruddy Bass, *Labrax Rufus*, both of which are constantly confounded with the Pearch, to which they bear a strong resemblance, being members of one and the same family, and are called by the New York fishermen Sea Pearch, White Pearch, and Salt-water Pearch.

These brave and hardy little fish run from a few ounces up to a quarter, and occasionally half a pound weight, which may be considered their maximum. They swim in large shoals, near the surface of the water, and are a most delicious fish. The Yellow Pearch is found occasionally in company with them, although he rather affects fresher water, and I have thought that when taken in tide streams he wears a greener garb than his ordinary dress.

The Minnow, the red worm, and at times small Shrimp will take all these varieties in the salt water; and from the very earliest dawn of spring to the setting in of severe cold weather, it is rare but the angler can find some sport with these quick and lively biters.

In almost every lakelet and pond from the sea-board to Lake Huron, the Pearch abounds, swimming in company with the Sun-fish, *Pomotis Vulgaris*, and the New York Shiner, *Stilbe Chrysoleucas*; they run from half a pound up to three, four, and occasionally even five pounds weight.

Saratoga Lake, the Greenwood Lake, in Orange County, New York,

Hopatkong, in Sussex County, New Jersey, Seneca Lake, and the Northern lakes, Huron more especially, contain these fish of the largest size, and in the greatest perfection, but every where they may be caught almost at any time.

In pond-fishing, the common ground-worm, on a shotted line with a quill-float, is perhaps the commonest bait; in America pastes are but little used as bait, nor in truth have I any great faith in them, although they are recommended by many good anglers. Of late years, however, I think they have lost repute. In the days of old Isaac they were esteemed almost sovereign.

The Minnow, Shiner, or small Trout is, in this country, by all odds, the most taking bait. It should be affixed to the line by one or two small hooks, either through the lip or under the dorsal fin as lightly as possible, and being sunk with a shotted gut to within a foot or so of the bottom, should be allowed to swim about at his own will.

I do not approve of the frog for Pearch fishing, although when in the humor they will take this, or indeed almost any fish or reptile bait. The following is Hofland's advice as to the mode of fishing for him; and although the English and American species are distinct, their habits are identical, and the rules laid down below cannot be improved upon.

The general rod will do well for taking Pearch, but a heavy one is not required. A reel and silk or grass-line with a gut bottom, or gimp, if Pike haunt the same waters, as is apt to be the case, will produce the desired effect.

The same tackle and mode of fishing will capture, at times, the Pickerel, the Pike Pearch, the Rock Bass, and even the Trout, and it is therefore well, in Pearch fishing, always to be provided with the tackle necessary to secure larger fish than those which you actually expect to take, and to be prepared and on the look-out that you be not surprised unawares.

"The Pearch loves to lie by the side of the stream, and under deep banks, or near beds of the water-lily, the eddies at mill-tails, and tumbling bays, near the old piles of wooden bridges, or old kemp sheeting; the best baits for a Perch are, the Minnow, the Gudgeon, the red worm, and the Brandling.

"A Minnow may be used by fixing a No. 9 hook under the back

fin, or by passing it through his lips, with a cork-float, carrying shot according to the depth of the water. You should fish within a few inches of the bottom, and when a fish bites, a little time should be given before you strike, as the Pearch is tender-mouthed, and, if not well hooked, is apt to break his hold. The paternoster is much used for Minnow fishing; it may be had at all the tackle shops; it is sunk by a small bullet, and has three hooks at different distances, which may be baited in the manner above described; but my favorite mode of Pearch fishing is, by spinning the dead Minnow, which gives me a chance, at the same time, of taking Jack and Trout.

"The Gudgeon or the Bleak may of course be used in the same manner when large Pearch are expected.

"In worm-fishing, the Brandling and the red worm are the best; a No. 8 or 9 hook may be employed, and the float must be suitable for the water. Some anglers prefer roving for Pearch in the following manner:

"Use a reel on your rod, and have bottom-tackle of three yards of gut, with a hook No. 8 or 9, with one or two shot-corns to sink the bait, which should be one or two well-scoured red worms, and you must then cast your line across the stream, letting it sink, and drawing it towards you alternately, till you feel a bite, then allow a few seconds before you strike. You may also drop this bait into still, deep holes, as in Trout-fishing; indeed, a practical angler—especially an old Trout-fisher—will prefer this mode of worm-fishing to the use of the float."

After these apposite instructions there is little more to be said; but I cannot refrain from quoting a few lines in relation to the habits of the Yellow Pearch in the West, from the pen of an admirable writer, * * * * *, who has contributed very largely to our stock of information concerning the fishes of the great lakes and Western rivers of New York, by his admirable articles formerly published in the Buffalo Commercial Advertiser. I shall have occasion to quote from him again, in relation to the Black Bass, the Oswego Bass, and the Lake Sheep's-Head, concerning which he has furnished us with the best information that we possess:

"In the spring, as soon as the ice has left the streams, the Pearch begins running up our creeks to spawn. He is then caught in them

in great plenty. About the middle of May, however, he seems to prefer the Niagara's clear current, and almost entirely deserts the Tonawanda, and other amber waters. You then find him in the eddies, on the edge of swift ripples, and often in the swift waters, watching for the minnow. As the water-weeds increase in height, he ensconces himself among them, and, in mid-summer, comes out to seek his prey only in the morning and towards night. He seems to delight especially in a grassy bottom; and when the black frost has cut down the tall water-weeds, and the more delicate herbage that never attains the surface is withered, he disappears until spring, probably secluding himself in the depths of the river.

"The back fin of the Pearch is large, and armed with strong spines, He is bold and ravenous. He will not give way to the Pike or to the Black Bass; and though he may sometimes be eaten by them, his comrades will retaliate upon the young of his destroyers.

"The proper bait for the Pearch is the Minnow. He will take that all seasons. In mid-summer, however, he prefers the worm, at which he generally bites freely. He is often taken with the grub, or with small pieces of fish of any kind."

I may here observe that the Pearch, like his congeners, the various tribes of Bass, will occasionally take the fly, though not so boldly or freely as to justify its use largely.

CARP FISHING.

This, I confess, I regard as very miserable sport, for though the fish is shy and wary, the difficulty in taking him arises only from his timidity and unwillingness to bite, and he is as lazy when hooked as he is slow to bite.

His proper haunts are deep, stagnant, slow-flowing streams, or ponds with muddy bottoms; and he lies under weeds, and among the stems and flat leaves of water-lilies, flags, and marsh-grasses.

Not indigenous to this country, he has been naturalized in the waters of the Hudson, where he is, for the present, protected by severe legislative enactments.

He will doubtless, ere long, become very plentiful; and as he is a rich fish when cooked *secundum artem*, and by many esteemed a great delicacy, he is likely enough to become a favorite with the angler.

Hofland thus describes the method of baiting the ground and fishing for Carp in England, and his directions are the best I have seen; they may by followed with implicit confidence:

"In rivers, the Carp prefer those parts where the current is not too strong, and where the bottom is marly, or muddy; and in lakes or ponds are to be found near beds of water-lilies, and other aquatic plants. Old Carp are very crafty and wary, and will not easily be taken by the angler; but young ones, when a pond is well stocked, may be easily taken in great quantities.

"Notwithstanding these instances of familiarity, it is by no means easy to make a large Carp familiar with your bait: to do this, the greatest nicety and caution must be observed; but if the young angler, who has been often foiled in his attempts, will patiently and implicitly follow my instructions, he will become a match for this cunning fish.

"Use a strong rod with running-tackle, and have a bottom of three yards of fineish gut, and a hook No. 9 or 10; use a very light

quill-float, that will carry two small shot, and bait with a well-scoured red worm.

"Now plumb the depth with the greatest nicety, and let your bait just touch, or all but touch, the bottom; but you are not yet prepared; for a forked stick must be fixed into the bank, on which you must let your rod rest, so that the float will fall over the exact spot you have plumbed. Now throw in a sufficient quantity of ground-bait, of bread and brand worked into a paste, and made into little balls; or, in want of these, throw in the garbage of chickens or ducks; and all this is to be done on the evening of the day before you intend to fish.

"The next morning, if in summer, be at the pond-side where you have baited and plumbed your depth, by four o'clock at least, and, taking your rod and line, which is already fixed to the exact depth, bait with a small, bright, red worm; then approach the water cautiously, keeping out of sight as much as possible, and drop your bait exactly over the spot you plumbed over night; then rest part of your rod on the forked stick, and the bottom of it on the ground.

"You must now retire a few paces, keeping entirely out of sight, but still near enough to observe your float; when you perceive a bite, give a little time; indeed, it is better to wait till you see the float begin to move off, before you strike, which you may then do smartly; and, as the Carp is a leather-mouthed fish, if you manage him well, there is no fear of losing him, unless the pond is very weedy. Be careful to have your line free, that, if a large fish, he may run out some of your line before you attempt to turn him; as he is a very strong fish, and your tackle rather light, you must give him careful play before you land him.

"The extreme shyness of the large Carp make all this somewhat tedious process necessary to ensure success; but I can safely assert, that I scarcely ever took this trouble in vain. Various baits are recommended for Carp—such as green peas, parboiled, pastes of all descriptions, gentles, caterpillars, &c.; but I have found the red worm the best, and next to this, the gentle, and plain bread-paste. Those who prefer a sweet paste may dip the bread in honey. Paste and gentle will answer better in autumn than spring. April and May are, in my opinion, the best months for Carp fishing; and very early in

the morning, or late in the evening, is the best time for pursuing your sport."

The above mode of baiting bottom grounds, and of fishing with the worm, in all its particulars, may be pursued with perfect success in all ponds and slow-running streams, for all the many species of the Carp family, which are, for the most part, the least carnivorous of fishes, and consequently the most difficult to allure, as the Bream, Roach, Dace, Chub, and Shiner, as they are provincially termed, though by no means identical with the European fishes of the same names. The Suckers, *Catastomi*, a sub-genus of the same family, will hardly take any bait whatsoever.

While fishing, as above described, both small river Pearch and Eels of all sizes are likely to be hooked, as the baited bottom-ground allures all those species which seek their feed at the bottom to its vicinity.

STRIPED BASS FISHING.

With the sole exception of Salmon fishing, this is the finest of the seaboard varieties of piscatorial sport. The Striped Bass is the boldest, bravest, strongest, and most active fish that visits the waters of the midland States, and is, as I have before observed, to be surpassed only by the Salmon.

Everywhere, from the capes of the Chesapeake to the St. Lawrence, they run up the rivers to spawn in the early spring, and shelter themselves in the shallow lagoons within the outer bars during the winter.

Everywhere they are fished for eagerly, and esteemed alike a prize by the angler and the epicure.

In every manner they are fished for with success, and with almost every bait.

The fly will take them brilliantly, and at the end of three hundred yards of Salmon-line a twelve pound Bass will be found quite sufficient to keep even the most skilful angler's hands as full as he can possibly desire.

The fly to be used is any of the large Salmon-flies, the larger and gaudier the better. None is more taking than an orange body with peacock and blue-jay wings and black hackle legs; but any of the well-known Salmon flies will secure him, as will the scarlet-bodied fly with scarlet-ibis and silver-pheasant wings which is so killing to the Black Bass of the lakes.

With the fly, he is to be fished for with the double-handed rod, precisely as the Salmon; and when hooked, though he has not all the artifice and resource of that monarch of the deep, he is hardly inferior to him in agility, strength, and vigor of resistance.

It is singular that more recourse is not had to this mode of taking him, as in waters where the Salmon is not, there is no sport equal to it.

Those who try this method will not, I dare to assert, regret the

trial; they must, however, fish from a boat, as the width of the streams which Bass frequent do not permit them to be commanded from the shores, even with the double-handed rod.

Again, the Striped Bass may be caught either with the gorge-hook and the trolling tackle described under the head of Pike-fishing, or with the spinning-fish and swivel-traces recommended for taking the Salmon. Almost any small fish will answer for the bait, but the New York Shiner, the real Smelt, or the Atherine—*alias* Sand Smelt or Spearling—especially the latter, will the most readily allure him. This method of fishing, second only to the use of the fly, is the most exciting, as it requires finer tackle, and consequently calls forth far more skill, than the ordinary modes of fishing for him at the bottom.

For boat fishing, a strong ash or hickory, and lance-wood, rod, with patent guides and the new agate funnel-top, which can be procured at Conroy's, and is one of the most perfect improvements of the day, with a Salmon-reel and two hundred yards of silk or grass line, will be found the best; of course, for Salmon-fishing, the hair and silk line takes the precedence of all others. A rod of twelve or fourteen feet will suffice from a boat, but for bank or bridge fishing one of about eighteen feet is preferred by the best fishers.

Comparatively few persons troll for Bass as described above; for, in fact, the great majority, even of our good fishermen, are in some sort pot-anglers, and prefer taking monstrous giants of the water with coarse tackle, to the far greater excitement of skilfully and delicately conquering a moderate-sized fish with the finest tackle. The Striped Bass, it is said, is known to attain the weight of a hundred pounds; but such giants are rare, though up to forty or fifty pounds they are no rarities. The largest fish are taken in deep, rapid tide-ways, such as Hellgate or the Haerlem river, by trolling from the stern of a row-boat with a strong hand-line and a large hook baited with that hideous piscine reptile, or insect rather, the real squid, or with the artificial squid of tin or pewter. A good deal of skill is required for this mode of fishing, but yet more strength than skill, and it is a very wearisome pursuit.

Still more fatiguing is the exercise of squidding for them with the artificial bait in the ocean surfs of the outer beaches, in which the toil of throwing out and dragging in the squid becomes a real labor.

Neither of these methods, any more than taking them on set-lines baited with Spearling or Tom-Cod, as is very successfully practised in the Hudson, do I regard as legitimate or honest fishing; and they are resorted to rather by the professional fisherman than by the amateur for sport.

Nor can I say that I look with much sympathy on those who fish for them as is the usual practice at Macomb's dam, King's bridge, or Belleville bridge on the Passaic, and similar places, with floats and sinkers and the bottom baits; though I confess that the size and vigor of the fish when hooked, render this the finest of all the kinds of bait-fishing.

The rule is, to fish as near the bottom as possible, with a sinker light enough to move with the tide. The hook should be large, and I believe the Kirby form is generally preferred to the Limerick. Some anglers recommend the use of double, others of single gut; and some fish with, others without the float; both plans have their own advantages, and probably there is little difference in reality between the two.

In rivers frequented by Shad, the Shad-roe, either fresh, or preserved and potted, as described above in reference to Salmon, is the most killing bait that can be used in the Spring-time, and is especially the favorite bait of the Passaic anglers at the Belleville bridge and the reefs near Acquackanonck I have no doubt of its success in the upper Delaware so high as Milford, where the Bass, there called Rock-Fish, is taken of rare excellence. In tide-ways it is obviously useless, since the Shad never spawn in such places, and as animals in a state of nature feed naturally, the Bass never looks for, nor will take, such a bait, except in spots where it abounds naturally.

The Bass may be fished for with success from early in April, sometimes even in March, until late in October and September. On his first appearance, and up to the latter part of June, the shrimp is the best bait; and it should be used with a float, suspended at ten or eleven inches distant from the bottom. From June, throughout the summer the shedder crab attracts the Striped Bass rather than any other bait A sliding sinker should be used in this instance, which rests on the ground, and allows the crab to move on the bottom. No float is required for this method.

So soon as the season is so far advanced that the shedder has recovered his scaly panoply, which sets his enemies' assaults at defiance, the shrimp again comes into play, and, with the various kinds of small salt-water fishes, constitutes the best river baits.

For boat fishing in the bay, with sinkers—as for the Weak-Fish, King Fish, and others, among which the Striped Bass is taken, the soft clam is the favorite appliance; and for this kind of sport full and neapt tides, and a wind off shore, are the best periods.

In killing the Bass, after he is hooked, great skill, great perseverance, and incessant vigilance are necessary. It is a *sine quâ non* to keep him up, frustrating his efforts to rush to the bottom, and to hold him ever in hand, with a taut line, ceding nothing to his wildest efforts, except on absolute compulsion.

Excellent tackle is requisite, and to preserve it excellent, constant attention to it must be had, or all will be in vain. Nothing is more provoking than to lose a fine fish, well played, and perhaps all but killed, owing to some slight imperfection in the gut bottom or the arming of the hooks, which care, before coming to the water's edge, would have easily and surely prevented.

Whether the Striped Bass has ever been killed by the fatal spoon, I know not; but I cannot doubt that it would be found nearly as effective as with its congener, the splendid Black Bass of the St. Lawrence, to which I shall now proceed.

BLACK BASS FISHING

IN THE ST. LAWRENCE.

From the Files of the Buffalo Commercial I borrow the following description of the habits, haunts, and modes of taking the Black and Oswego Bass—if different they be, as I believe they are in the Niagara river. It is by the same distinguished sportsman and sound naturalist to whom I have before alluded in my article on the Pearch.

I prefer quoting him to writing of this fish myself; as although not unacquainted with his habits, I have never yet myself enjoyed the pleasure of catching him either with the fly, the spoon, or the shiner :

"The Oswego Bass and Black Bass bear so strong a resemblance to each other, that not one fisherman in ten knows them as distinct entities. In form, color, weight, and habits, the two are almost perfectly identical; and yet their differences, though minute, are striking and essential. An Oswego Bass, when placed by a Black Bass of the same size, is readily distinguished by his more forked tail, his greater thickness of shoulder, his coarser scales, and, above all, by his mouth, which, when open, is nearly twice as large as that of the Black Bass. In Lake Ontario, the Oswego Bass is abundant, and the Black Bass comparatively rare. In Lake Erie, the Black Bass greatly predominates, and it may be doubted whether the Oswegonian—like certain citizens of the Ontario shore—is not an interloper in our waters, who has found his way to us from below, through some canal. However this may be, he is certainly right welcome!

"The Black Bass is our chief object of pursuit—his capture is our dearest triumph—his captive form our proudest trophy. When word first comes, in June, that the Black Bass bites in our river, what a stir there is among our anglers!—what questioning as to the when,

and the where, and by whom, and with what bait, and the number, and size!—what an anxious inquiry after big minnows!—what a raking and scraping of pond-holes for soft lobsters!—what a watching of the skies!—and, if there be no wind, or a zephyr from the south or west, what bright and hopeful faces!—but if the storm rage, or an easterly wind, however gentle, fan our sleeping bay, what rueful countenances!—what half-suppressed repining!—what a woful, spiritless attempting to be busy about our ordinary avocations! And why this commotion? Because this is the very prince of our game-fishes. His capture is a less easy task, and involves, or is supposed to involve, more science, and to be a truer proof of merit as an angler, than any other tenant of our crystal waters. But—let me whisper it in thy ear, my friend!—there is much of fancy in all this. He is a noble fish, and struggles vigorously and most pertinaciously for liberty; but no art nor skill, unattainable by thee, or any one, is requisite to hook or draw him from his element.

"This fish beds in our streams and rivers, and probably, too, on the bars and shoals of our bay. Numbers run up the larger streams in May, and bite freely at the worm, in the middle and latter part of that month, in the Tonawanda. His appearance is too familiar to need description. His color varies, though it generally approaches black. I think only the smaller Bass run up the creeks. Those taken in Tonawanda seldom overweigh two or two and a half pounds, and have a greenish hue. In the river they attain a weight of four and four and a half, and even five pounds; and occasionally heavier ones have been taken, weighing even eight pounds. The river fish, when fresh from the water, is frequently banded, like the Pearch, with broad bars of a darker hue, which disappear, however, and fade into the general color of the fish as he becomes dry. He seldom takes the hook, in the Niagara, until June. He is always fine eating, but is fattest and best in autumn."

"He is angled for," says Mr. Brown, "in the usual way, and with the same arrangement of tackle as the Striped Bass or Salmon; and with some enthusiastic western sportsmen, is thought to give more amusement than either. But the most active and exciting mode of pursuit is with the trolling rod and boat. We are indebted to a friend who has frequented Lake George, for the following interesting communication:

"'This is a game fish, affording the angler the very highest enjoyment. These fish are taken in various ways. When collected on their feeding grounds, in August and the succeeding fall months, they are sometimes taken in considerable numbers. The usual mode of angling for them at this time, is either with or without a float, and with live bait—a small fish taken for the purpose, along the lake shores or in brooks. They are exceedingly strong and active—qualities which delight the angler. When first hooked, they run very wild, and almost invariably rise to the surface, and leap one, two, and even three feet in the air, shaking the head violently, evidently with a view to dislodge the fatal hook. Frequently, while making their runs, they will suddenly turn and come with all their power directly towards their enemy, and by thus slacking the line, will succeed in shaking the hook loose: this often happens with inexperienced fishermen, but more rarely with the angler who holds a good reel and winds rapidly. The most beautiful mode of angling for them known, is trolling, either with live bait or an artificial fly of large size and gay appearance. The writer has succeeded remarkably well with a fly made on a large-sized Limerick hook, such as are used for Striped Bass when fishing with crab bait. The fly is made as follows:—Body of a peacock feather, wings of bright scarlet kerseymere and white pigeon feathers; or, the feather stripped from a white goose-quill, and wound round like the hackle, and surmounted with thin strips of scarlet forwings. For trolling pleasantly and comfortably, the angler should provide a moveable seat, which he can place across the gunwale of his boat, in order that he may sit with his back to the oarsman, and facing the stern. Thus he will have full command of his rod and line, and not be sitting in the cramping attitude which the lowness of the seats would cause. He should reel off fifty to sixty, or even one hundred or more feet of line, and in going over shallow reefs of seven or eight feet depth, two hundred feet, as the fish feeding on the reefs usually dart aside as the boat passes, and do not return immediately to their harboring spot, which is one reason why those who do not use the reel are not as successful as those who employ it. After a few moments they glide back to their favorite spot, and as the fly comes along, dart at and seize it. A strong tug is felt by the angler, who has only to draw gently, and

his prey is fastened. The oarsman rests on his oars, to give the angler full command of his line. The noble fish, after one or two runs to right and left, suddenly rises and makes his splendid leap, and plunging, again seeks the bottom, again rises, and then tries his last experiment of dashing right towards the boat. He struggles long and vigorously, but his strength is at last exhausted, and you trail your unresisting captive to the landing net. I have taken them of various weights, the largest weighing five pounds nine ounces: this was done last summer, 1844, in Lake George. I believe they are sometimes taken much higher in the St. Lawrence river, and upper lakes; but my acquaintance with them is limited to the beautiful lake just mentioned.

'At Sherrill's capital hotel at Caldwell, every facility for enjoying this delightful sport can be had, though the best fishing grounds are down the lake.

'An excellent house is kept by Mr. Garfield, twenty-two miles down the lake, where the best fishing stations for the Salmon Trout are situated. There is a good deal of fine ground for the Bass in the neighborhood.

'About ten miles from Caldwell, there is a place called the Narrows, where there are numerous small islands, with shelving rocky shores, and fine trolling ground.

'Anglers will find good plain accommodation at a house kept by Mr. Lyman, who is very kind and attentive to his guests, and furnishes baits, guides, &c.

'In trolling for the Black Bass in Lake George, you will frequently strike those of one-half to three-fourths pound weight, even with the very large fly which I have described. There is so great a difference, both in shape and color, between the fish of this size and those of two or more pounds weight, that a stranger would never take them to be of the same species. These small fish are very similar in shape to the Blue-Fish of the salt-water, while those of the larger size spread in width as they increase in size, so that a fish of two and a half to three pounds, is of a shape between a Black-Fish, or Tautog, and the famous Sheep's-Head. In color they differ also greatly; the small Bass being of a light dull greenish color, while the larger grow darker as they increase in size, the largest being nearly black on the

back, and of a very dark brownish green on the sides. The younger gentry, above described. are not to be despised on account of their size, for when taken with a light Trout-rod, they will be found to be a fine vigorous fish; and when in their temerity they seize the large fly, on feeling the hook, they will, true to their nature, make the leap, in imitation of their sires, thus showing themselves to be game fish. I have known them to leap three times while reeling in the long trolling line, whereas the larger gentry rarely leap more than once.'"

In addition to this I will only add—for all that is said here is correct and clear—that in the St. Lawrence, among the Thousand Islands, this admirable fish is taken in unequalled numbers, and of unrivalled excellence. That in the Black river they are likewise very abundant, and rise in it very freely to any gaudy fly. A friend of my own has killed many of this fine Bass with a large red hackle, with a gold tinsel body, and also with a green-tailed grannam. The best fly, however, is decidedly one manufactured by Conroy, after the colors of that described in the above quotation, with a scarlet chenil body, under wings of the red iris, and upper wings of silver pheasant; this will be found unfailing.

A singular fact, which obviously, though oddly enough, escaped the observation of my friend at Buffalo, is that at the first appearance of the Black Bass at the mouth of the Niagara, say in the latter part of May, the fish all lie around a reef on the Fort Niagara—or American—side of the river, not one being ever, at that period, taken on the Canadian reef opposite. After about six weeks' residence, however, they change sides, and cross over, deserting the American shore altogether, and being taken only on the Canadian side.

The New York Shiner is there esteemed the best bait, and with it, in last May, an officer and three men in H. M. service, caught in a few hours enough of these fish to load two strong men to their heart's content.

The small Rock Bass of the lakes is taken off the wharfs and docks on all the same waters, from Kingston to Lake Superior, with the Minnow or small Shiner, though rarely with the fly. It is a good fish, but rarely exceeds a pound in weight.

From the first writer I here quote a few lines concerning the Lake Sheep's-Head, *Corvina Oscula*, to which I have alluded before, but

which must not be confounded with the Malasheganay— or Black Sheep's-Head, *Corvina Richardsonii*, a congenerous fish, taken nearly in the same waters, and with the same bait—any, to wit, of the fresh-water Molluscas, and, above all, with the Cray-Fish—which is as excellent as this other is abominable on the table :

"This is a villain in general estimation—the pest of the fisher for Bass—a fish that putteth the cook, who would render him acceptable at table, in a quandary—from which, I am sorry to say, I cannot relieve her, though she be at her wit's end.

"He is generally brown, gray or reddish above, and of a dead, impure white below. His head is large, and his body is flattened latterly, though the frying-pan rejecteth him. His ordinary weight is two or three pounds, though he sometimes weighs five, and even six. His food, his haunts, his habits, are similar to those of the Black Bass, whom he ever accompanieth, as though he were intended by nature as a foil to set off the merits of that jewel of the flood. He is despised, yea, detested, by the choleric angler, who pulls him out, and then dasheth him upon the stones.

"The Sheep's-Head of the sea is a lusty, crafty fish, bepraised alike by the fisherman and the epicure. At the turn of the tide, he takes the whole soft clam on your hook at a mouthful, and chews it, shell and all, and pulls like a Salmon as you draw him in ; and his radiant, deep and broad-barred sides—as he flaps about on the sand of that low islet in the great south bay of Long Island, to which you have just hauled him—how brilliantly they show, and make you think of the dying Dolphin, and of old Arion ! And when he reposes at the head of the table—fit place for him—beautiful, though boiled, how heartfelt is the homage he receives from all around ! Truly, it is libel on him, to call by the same name this Paria of the lakes.

"And yet our fish is vigorous, and not altogether destitute of beauty, to the eye at least of those who know him not. Is it not chronicled, that at Black-Rock, a strange angler once bartered away two noble Bass for two large Sheep's-Heads, which, for the nonce, were called White Bass ? 'The freckled toad, ugly and venomous, wears yet a precious jewel in his head'—and our fish, in his clumsy cranium, wears two small loose bones, serrate, and white and polished, which must have some use to him, some wondrous adaptation to his mode of

life, which, when unfolded, will prove that he is not unregarded by Him who made the great whales and the fishes of the sea.

"His mouth is paved with large, flat, rough bones, or teeth, like those of the sea fishes that root up and devour the hardest testaceæ; and I have little doubt but that the naturalist who watches him narrowly, will one of these days detect him crushing and consuming the Unio and Anodonta—the fresh clams of our muddy flats and sandy bars.

"He bites at the worm, the Minnow, the Chub, the Lobster, and makes good play with the line, though he gives in more quickly than the Bass. An experienced angler can generally distinguish his bite and his resistance—but the most knowing ones are sometimes taken in, and think him Bass until he is fairly brought to view.

"When you have caught him, let any one who will accept him have him; and take to thyself no merit for the gift. His meat is more like leather than fish or flesh. It is a common saying, that the more you cook him the tougher he becomes; and I am not aware that he is ever eaten raw. But, some people do eat him, and profess to like him; they must have stupendous powers of mastication and digestion. I have been told that, roasted whole in the ashes, just as he comes from the water, he is savory and tender—*sed credat Judæus!* I once did eat him, prepared as follows:—He was split through the back, put upon the gridiron, there grilled enough to cook a side of pork; his flesh was removed from the skin, boned, chopped up into dice, probably with a cleaver, and stewed with milk, butter, pepper and salt. I must say that, though it was meat of great tenacity, and might well be likened unto India-rubber, it had much sweetness."

EEL FISHING AND TRIMMERS.

With regard to the Eel, if I consulted my own tastes only, I should remain in utter silence, holding them totally below the contempt of the angler, although *en matelotte*, or *a la tartare*, on the table they certainly are not despicable; there are, however, those who probably think otherwise, and who would regard it as an omission, perhaps a slight, if I were to pass over their favorite wriggling reptile. I therefore quote from Hofland's British Angler the following, which comprises all that can be said on the subject, and is no less applicable to the Eel of America, than to that of Great Britain:

"To angle for Eels, use a strong gut line, with a light float, and No. 9 hook, and bait with a large red worm; or use a No. 6 hook, and bait with a marsh-worm, and let your bait touch the bottom; but the most alluring bait I know of for an Eel is, Salmon-roe; and when fishing for Trout with this bait, the angler will frequently take Eels, much to his annoyance, if, like myself, he detests their dirty slime, and serpent-like writhings. I shall say nothing of bobbing for Eels, or of sniggling, as they are practices below the angler; but as the largest Eels are caught by night-lines, and this method is a necessary resort for the supply of the table, I shall give the instructions of Daniel on this point.

"'It is of little consequence where they—i. e. night-lines—are laid, as they will succeed in streams, when the Eels are in search of food, as well as in the still, deep holes of rivers; and they will take frogs, black snails, worms, Roach, Dace, Gudgeons, Minnows—which two last are the best—Loaches, Bleaks, and Millers' thumbs;' a sufficient quantity of links, of twelve hairs, should be doubled—or use twisted gut, and a hook tied to each link; these are to be noosed, at proper distances, to a piece of cord fifteen feet long; bait the hooks by making an incision with the baiting-needle under the shoulder, and thrusting it out at the middle of the tail, drawing the link after it; the

point of the hook should be upright towards the back of the bait-fish; fasten one end to the bank, or a stub, and cast the other into the water, but not to the extent of the line, as Eels will run a little before the gorge; the lines should be taken up early in the morning; such of the lines as have Eels at them will be drawn very tight. Dark nights in July, August, and September, are the best for this kind of fishing.'

"Hooks proper for this method of taking Eels may be purchased, either double or single, and are called Eel-hooks. When a double hook is used, I should say the following mode of baiting is better than Mr. Daniel's. Without a baiting-needle, enter the point at the fish's mouth, and bring it out at the tail, letting the two hooks lie close to the mouth of the bait, as described in baiting the gorge-hook for trolling.

"Trimmers, baited with a live Gudgeon, are sure to be taken by Eels. The wire to which hooks are fixed should be strong and well tempered, as the Eel struggles hard to free himself. Very large Eels are caught in the lakes of Cumberland and Westmoreland, by trimmers, baited with small Trout or Pearch—there called Bass—with the back fin cut off. On Derwentwater—Keswick lake—it is a common practice for parties to engage a fisherman, who provides twenty or thirty trimmers; the tops being painted bright red and white, that they may be seen at a distance. The party should be in the boat by four o'clock, A. M., at the latest; the fisherman then baits the trimmers with live Bass, small Trout, or Minnows, and places them at equal distances across the lake, spreading to the extent of from half to three-quarters of a mile; and if there are two or three boats belonging to the party, and the Pike and Eels are on the feed, the great diversion is to see the trimmers carried off by fish, in different directions at the same time, when all becomes animation and exertion in the different boats; all rowing towards the trimmers, and eager to seize on their prey; and very large Pike and Eels are often caught in this manner."

SHOAL-WATER SEA FISHING.

This sport, which is pursued with great eagerness by many of our city anglers, has for its scene the various channels, bays, shoals, reefs and mud-flats of our harbors, the great land-locked lagoons along our coasts, and many places in the East river, and Long Island, as well as in the estuaries of all the larger rivers from the capes of the Chesapeake to Massachusetts Bay.

It is pursued in boats, which are rowed from spot to spot, and anchored over the various reefs and shoals, or in the vicinity of sunken reefs, about which these fish are supposed to abound, according to the state and variation of the tides. The fish usually taken are the Squeteague or Weak-Fish, the Barb, or King-Fish, the Tautog or Black-Fish, the Striped Bass, the Sea Bass occasionally, the Sheep's-Head, the Big Porgee, and sometimes the Drum.

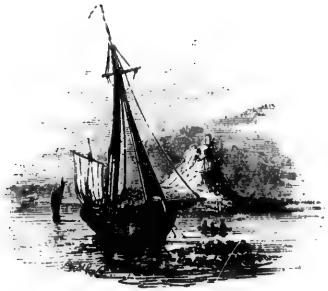
For the Sea Bass, however, and the Porgee, longer excursions are generally necessary, as the best fishing for these is on the outer sea-banks, in the Atlantic, whither steamers and sloops occasionally proceed with companies for a day's amusement. In these, however, there is most frequently more fun than fishing, although sometimes very good sport is had, and greater quantities of fish taken.

For Sheep's-Head, again, boats are generally fitted out expressly, as this large powerful fish and heavy biter requires stronger tackle than is needed in the capture of any of the other species.

The ordinary booty, therefore, of the shoal-water sea angler, is confined, nine times out of ten, to the Weak-Fish, the King-Fish, the Striped Bass, and sometimes the Black-Fish, although this latter differs somewhat from the others in his accustomed haunts; and for these, all of which may be taken with the same tackle, and nearly with the same baits, he constantly goes prepared.

The best localities for this sport are so numerous, and so well known

to the guides and professional fishermen of every neighborhood, that it is needless to enter into a particular narrative of their whereabouts, since it is very little likely that a stranger would attempt to find them unassisted by a guide, and to the practised and experienced angler of each region, they are of course well known.



THE WEAK-FISH.

The Weak-Fish is a very abundant species in the vicinity of New York, and is angled for with much success in almost all parts of the inner bay. The name is said to be derived from the weak mouth of the fish, which is so soft that it very frequently is torn by the hook, and so allows the fish to escape. It pulls fairly upon the hook, and when struck of a considerable size, gives considerable play to the angler before he can be secured.

Many persons fish for this species, and the others which haunt the same grounds, with the drop-line, but this is a poor and unexciting sport, as compared with the use of the rod and reel.

The best rod is a moderately stiff general fishing-rod, with a reel, and from one hundred to one hundred and fifty yards of flax or hemp line; a No. 1 Kirby hook will probably be found, on the whole, the most successful; and the most killing baits are shrimp, shedder-crabs, or clams. The Weak-Fish occasionally runs up to eight or nine lbs. weight, but the general average does not probably exceed two. When quite fresh out of the water, the Squeteague is a very tolerable fish not a little resembling the Trout in flavor, but it very soon becomes soft and flaccid. It is by no means so game or so good a fish, when taken, as the Striped Bass or the King-Fish, yet it is not without many votaries who pursue it with ardor.

Immediately around the Battery, and even from the Castle Garden bridge, good sport is frequently had with this fish, as also on the flats off Communipaw, in Buttermilk Channel, off the Owl's-Head, as well as at Bergen Point, Elizabethtown Point, and many other places, both in the Kills, and in Newark Bay. It is said that the afternoon tides are the most favorable for taking the Squeteague, until a short time before sun-set, but that so soon as the peculiar drumming or croaking sound, which is ascribed to this fish, is heard, it is useless to fish longer, as he then ceases to bite.

THE BARB, OR KING-FISH.

This is, in all respects, a better and finer fish, both for the captor or the epicure, than the last.

He is with us, at New York, a summer fish of passage, and is, it is much to be lamented, becoming yearly more and more rare.

In Mr. Brown's American Angler's Guide, it is stated that, "As a game fish, he is considered as giving more real sport than the Trout, Bass, or Salmon. His name and whereabouts has only to be whispered to the New York angler, and he is off after sport that he has perhaps anticipated for years."

Now, to this I must record my positive dissent; for, though it may be, and is, very true that the King-Fish is a great favorite with the New York angler, that he is a game fish, biting briskly in those seasons when he is found abundantly in these waters, and offering resistance both longer and stronger than any other small salt-water fish—still no one—except those jolly old codgers who consider patience demonstrated by sitting still in an anchored boat, and comfort evidenced by the consolation of the inner-man with beef sandwiches and cold brandy-and-water—would dream of considering it better sport to sit for hours, between Black Tom and the Jersey shore, with no hope save that of hooking a little fish, which rarely exceeds two pounds in weight, with a bottom bait and strong ground tackle, than to hook a twenty-pound Salmon with a fly on the surface, and to play him for an hour before he can be gaffed.

The one sport requires luck and patience—the other skill, hardihood, endurance, courage, long experience, quick eye, stout heart, fleet foot, and ready hand. How, then, shall these sports be compared?

I do not desire, however, to discredit the King-Fish; nor does he

in anywise deserve it, as, both for *durante vitâ* and *post-mortem* excellence, he deserves all honor.

He is to be caught most easily with the rod and tackle before described, under the head of the Squeteaque, or Weak-Fish, except that a smaller hook should be used, the mouth of the King-Fish being small. The best bait is the shedder-crab.

In a former portion of this work, devoted to the consideration of the natural history of fishes, I have quoted an anecdote, published in the New York Commercial Advertiser, of July 6, 1827, recording the capture of *four hundred and twenty-two* King-Fish, by a boy and a man, in the space of six hours, in Jamaica bay, off Rockaway; and I find it stated in the American Angler's Guide, that twenty or thirty are often taken in a single tide.

The first feat is unsurpassed, and probably never will be equalled; the second is of most rare occurrence, so much so that now-a-days the angler justly holds himself favored by the marine deities, who kills his half-dozen King-Fish in a day.

All this, however, may be changed at any moment; for the comings and goings of all migratory animals are more or less—and those of migratory fishes, most—irregular.

Their visits are like those of angels, few and far between. The King-Fish, the Lafayette, the Blue-Fish, nay, even those scaly customers, the Prawn and the Lobster, will swarm this year, disappear entirely the next, and after an absence, longer, perhaps, than Jacob's double courtship, will again gladden the hearts of their lovers by returning in numbers innumerable.

In New York harbor, the flats from Bergen Point to Jersey City, within the fortified islands, and the big rock called Black Tom, and opposite Communipaw, are the best waters for the King-Fish. But in the Passaic bay, and off Elizabethtown Point, and also in the lagoons of Long Island, they are taken often in great numbers.

May they soon return to us as thickly as of yore, and remain as long as it suiteth them. They shall be welcome.

THE SEA BASS.

THE Sea Bass is another gentleman among his finny comrades, and he is sometimes taken by the rod-fisher while angling for the Squeteaque, or King-Fish. He is, however, difficult so to kill, and is comparatively rare in the inner waters.

On the sea banks without Sandy Hook, in the lower bay, and in the Sound, he is very abundant, and affords great sport to those who are satisfied with quick biting and continual hauling in.

Both for the Bass and the Big Porgee, stout hempen or flaxen drop-lines are the most successful, varying from ten to twenty-five fathoms in length, fitted with a single sinker of a pound weight, and three or four hooks on separate snoods, eighteen inches asunder, of various sizes, for various species of fish.

For Porgees, the No. 3, round Black-Fish-hook, is preferred; for Sea Bass, No. 1 or 2, Kirby. The only bait is the clam, and it is desirable to salt him for a day, which, hardening the flesh, renders it more difficult for the fish to abstract him.

No skill is required for this mode of fishing, except that of keeping one's wits about him, striking very sharply the instant he feels a bite, and hauling in rapidly with a taut line; for, if a slack occurs, the fish will often disengage themselves.

Many people are very fond of this sport, but I hold it, after all, but heavy work, not the less so for being considerably laborious, and for the fact that hauling in the small, cutting line, hand over hand, and the salt-water, are apt to make the fingers exceeding sore, if gloveless; and to use gloves in angling, would be something like donning the upper Benjamin with fox-hounds.

THE TAUTOG, OR BLACK-FISH.

Of him Dr. Mitchil, not unsagely, nor unpleasantly, discourseth after this fashion. The facts of natural history, as herein recorded, are worthy of all confidence; nor are the maxims worthless to the angler:

"The Black-Fish abounds in the vicinity of Long Island, and is a stationary inhabitant of the salt-water. He never visits the rivers, like Salmon or Sturgeon; nor, on the other hand, deserts his dwelling-place as they do. He is fond of rocks, reefs and rough bottoms. He is taken through the whole course of Long Island Sound, Fisher's Island Sound, and in the neighborhood of Rhode Island. The Tautog was not originally known in Massachusetts Bay; but within a few years he has been carried beyond Cape Cod, and has multiplied so abundantly, that the Boston market has now a full supply, without the necessity of importing from Newport and Providence. The Black-Fish, however, does not confine himself to rough bottoms; for he is also caught in the southern bays of Long Island, and on the banks of the ocean off Sandy Hook. He is considered, by the New Yorkers, as a very fine fish for the table. He grows to the weight of ten or twelve pounds, and even more; but it is a fish of a good size, that equals two or three.

"He may be kept for a long time in ponds or cars; and fed, and even fatted there. When the cold of winter benumbs him, he refuses to eat any more, and a membrane is observed to form over the vent, and close it. He begins to regain appetite with the return of warmth in the spring. The blossoming of the dogwood, *cornus florida*, early in April, is understood to denote the time of baiting Black-Fish. As soon as these flowers unfold, the fishermen proceed with their hooks and lines to the favorite places. If there is no dogwood, a judgment is derived from the vegetation of the chestnut tree *castanea vesca*. The

season of baiting is reckoned very favorable until the increasing warmth of the season brings food enough to fill their stomachs, and they thereupon afford less pastime to the sportsman, and less profit to the professor. The people express this sentiment in these coarse rhymes:

"'When chestnut leaves are as big as thumb nail,
Then bite Black-Fish without fail;
But when chestnut leaves are as long as a span,
Then catch Black-Fish if you can.'"

"The common bait for Black-Fish is the soft clam, *mya*. The soldier crab, or fiddler, *ocypoda*, will frequently tempt him when he refuses to taste the other. And he snaps very readily at the large finny worm of the salt-water beaches, *nereis*, when used on a hook for him.

"Some persons, who live contiguous to the shores where are situated the rocks frequented by Tautog, invite the fish there by baiting. By this is meant the throwing overboard broken clams or crabs, to induce the Black Fish to renew their visits, and fine sport is procured.

"Rocky shores and bottoms are the haunts of Black-Fish. Long experience is required to find all these places of resort. Nice observations on the landmarks, in different directions, are requisite to enable a fishing party to anchor on the proper spot. When, for example, a certain rock and tree range one way, with a barn window appearing over a headland the other way, the boat being at the point where two such lines intersect each other, is exactly over some famous rendezvous. To insure success on such expectation, it is proper to have a pilot along, well versed in all the local and minute knowledge. According to the number and distance of the rocks and reefs visited, will be the time consumed, from the duration of a few hours to a long summer's day. An opinion prevails, that the Black-Fish can hear very well; and, for fear of scaring them away, the greatest stillness is observed. He is a strong fish, and pulls well for one of his weight and size.

"At some places Black-Fish bite best upon the flood: in others, they are voracious during the ebb. Thunder accompanying a shower

is an indication that no more of them can be caught. The appearance of a porpoise infallibly puts an end to sport. Curious stories are told of fish in the wells and ponds, floating in their native element, having been found dead, after sharp and repeated flashes of lightning. Dull weather, with an easterly wind, is generally the omen of ill luck. The exploits performed in fishing for Tautog, are recounted occasionally, with remarkable glee; and they afford a never-failing theme of entertainment to those who are engaged in that sort of adventure. Though the hand line is generally used, the rod is sometimes employed to great advantage. The Black-Fish is remarkable for retaining life a long time after he is taken out of water. He sometimes swims over even ground, and is caught in seans."

A stout trolling rod, with a strong flaxen line, and a reel, are the best implements. The hooks should be those known universally as the Black-Fish hook, of various sizes, according to the angler's taste, ranging from three to ten. These should be armed—two being used, which is the proper number—on hook links of trebly-twisted gut, respectively, of twelve and fifteen inches, which links should be securely fastened to a small brass ring. This ring is to be looped to the end of the line to which the sinker is appended.

This is the best arrangement of the hooks for all salt-water shoal bait fishing.

The Black-Fish is entirely a bottom fish, and is caught everywhere within his geographical range, in whirls and eddies, in the close vicinity of rocks and reefs.

Robin's reef, at the entrance of the Kills, is a favorite feeding-ground; and some years since I had rare sport daily for many weeks, about the hull of the wrecked packet ship Henri Quatre, below the Narrows.

The rocks off the well-known watering house, the Sachem's Head, on the Sound, and many other rocks in the bays and Sound of Long Island, are of equal reputation.

He must be struck sharply, and pulled up without a moment's quarter.

He is better in the pan than on the hook, and better on the table than in the pan. How you may cook him you shall learn hereafter.

THE SHEEP'S-HEAD.

THIS capital fish, which holds the same repute in America which is held by the Turbot in Europe, is sometimes hooked by the rod-fisher while angling for the Barb, Squeteague, or Striped Bass; but when this occurs, he generally beats his retreat successfully, carrying off with him bait, bottom-line and hooks together.

Still he is sometimes mastered by delicate skill and judicious administration of the reel, but then only by the stoutest tackle, manipulated by the best of fishermen. Drop-lines of strong hempen cord, or the ordinary Cod-line two hundred yards long, with a heavy sinker, and a large stout Black-Fish hook, will, however, pretty certainly bring him home.

He frequents the vicinity of rocks, and loves to bite at the small rock-crab, and the soft-shelled clam.

The best way is to bait with the clam whole and unbroken, burying the whole hook nearly to the arming in the neck of the clam. By doing this, the incessant and vexatious nibbling of the small fish is avoided; and the shell of the clam is a mere nothing to the great paved round teeth, which line the palate of this strong, voracious fish.

Where small fish are not frequent, the clams may be put on open, with success.

The Sheep's-Head is becoming scarce in the harbor of New York, and those brought into the city come mostly from the south bays of Long Island.

No fish is better on the table, or more valued.

He is the highest prize of the salt-water angler, and the idol of the epicure's adoration.

Let him enjoy his reputation, he deserves it; perhaps the knowledge of his posthumous honors may be a consolation to him in his death-pang.

THE DRUM.

NEITHER to catch nor to cook the Drum, will I teach you, gentle reader mine, for he is not worth the hook which he will probably carry away, if you strike him, nor the salt which you might waste in seasoning him.

Unless in his vast size and great power, he has no merit, and in these he is surpassed by the Shark, the Porpoise, and the Whale, for which I should about as soon think of angling.

BLUE-FISH FISHING.

A GENERAL favorite from his southern to his extreme northern limit, this great Mackerel is every where an object of pursuit, and deserves to be so, both for the fun of taking and the pleasure of eating him. When fresh from the water he is superlative. A very bold and daring biter, he is caught in great numbers in swift tide-ways, eddies and inlet mouths. In the Sound, in the Long Island South Bay channels, in the inlets of the Jersey beaches, from June to August, he affords rare sport.

Sail for him in a large cat-rigged boat, and the fresher the breeze, and the brisker the sea, the better. In large schulls he swims near the surface, leaping at every living thing which crosses his track of devastation.

When you have the luck to strike a schull, stick to it perseveringly,

crossing it tack and tack, as fast as you can go about in the direction of its course; and if the gods of the deep look with benignance on your labors, you shall kill a hundred at the least, in a tide.

Thus fish for him: To a stout cotton line of a hundred yards, affix a squid of bright tin, or bone, armed with a good-sized Kirby hook, with a strong gimp hook-link. Make fast the end of your line to a cleet in the stern of the boat, then whirl out the squid to the whole length of your line, and play it with both hands alternately. The fish will strike itself, and is to be hauled in with a regular even pull, never jerked, nor yet slacked for an instant, for if it be, the fish will disengage himself almost certainly.

When you tack your boat, if the water be shoal, haul in your line, else shall you foul it in the sea-weeds.

When you have hooked your fish, raise your squid with the hook uppermost, and a slight shake shall cast him into the bottom of the boat.

Babylon, Islip, and Quogue, on Long Island, in Fire Island inlet, and Pine inlet, Shrewsbury, Squam-Beach, and Barnegat, in New Jersey, the estuaries of the rivers in Connecticut, and the tide-ways in Boston harbor, are all favorite grounds for Blue-Fishing.

To conclude: there is no pleasanter summer day's amusement than a merry cruise after the Blue-Fish, no pleasanter close to it than the clam-bake, the chowder, and the broiled Blue-Fish, lubricated with champagne, learnedly *frappee*, and temperately taken, no unpleasant medicine. What adds most to the zest of such a day, is the presence of the charming sex, this being one of the few sports of field or flood in which they can femininely, and therefore fittingly, participate. For the rest, you *may* take Blue-Fish, say the philosophers, of thirty pounds weight, though I doubt it. Of four and five pounds you *shall* catch him surely; if of eight, rejoice; if of ten, sing pœans,—for that is a triumph.

DEEP SEA FISHING.

THE Cod, the Haddock, the Whiting, the Hake, the Halibut, and the Flounder, may be caught every where north of Massachusetts; and from Boston to the eastward, parties of pleasure are made constantly to take them. On the Great Banks they are most abundant, but in Boston Bay great sport is not uncommon, nor is it unusual for a single boat to bring in its fifteen or twenty quintals of these fine fish.

The whole sport consists in the frequency of the biting, and the size of the fish, which, for the most part, varies from ten to fifteen pounds; for though they are sharp and voracious biters, they require no play when hooked, offering only an inert resistance, and a dead heavy pull.

Fifty yards of stout hempen line, two small-sized Cod-hooks, baited with the mud-clam, the menhaden, or where it can be procured, the capelin, and a pound sinker, is all your apparatus.

With this, in any eastern water, you may rest assured of returning home with a boat-load of fish, a set of very weary limbs, a pair of very sore hands, and an enormous appetite, of which, *me judice*, the first and the last alone are desirable.

If you be content with these, fair or gentle reader, go out for deep-sea fishing when and where you will, provided you ask me to follow you no farther; for here, once more we must part. Ere long, if the fates—and the booksellers—be propitious, I trust, to meet again, with undiminished satisfaction, each of us with the other.

And so fare ye well, who have accompanied me so far on my rambling way; may all your pleasures, as you *would* have them, be both long and lasting; and all your pains, as ye *must* have them, being mortal men, brief and transitory; and so may fair fortunes be about ye, and kind thoughts toward FRANK FORESTER.

APPENDIX.

APPENDIX.—(A.)

THE ANGLER'S APPARATUS.

From Hofland's British Angler's Manual.

It is impossible to become a successful angler, without such a complete and well-arranged assortment of tackle as will enable you to be prepared for all times, seasons, and circumstances; and a true brother of the craft will find much to amuse him in the exercise of his ingenuity in making and repairing lines, flies, &c., and in the orderly disposition of the materials of his art—of which the following is a list:

Rods for Salmon-fishing, trolling, spinning the minnow and bleak, fly-fishing, and angling at the bottom.

Lines of hair, silkworm gut, Indian weed, plaited silk and hair, and patent line for trolling.

Winches or reels for running-tackle.

Hooks for trolling, on wire or gimp, for the gorge, the snap, &c.

Bleak and minnow tackle, and baiting needles, of various sizes.

Hooks tied on gut, from No. 4 to No. 12.

Hooks tied on hair, from No. 10 to No. 13.

Loose hooks of all sizes.

Paternosters for Pearch-fishing.

Shoemakers' wax and sewing-silk.

Floats of various sizes, and caps for floats.

Split shot and plummets for taking the depth of the water.

Disgorger, clearing ring, and drag.

Landing-net, gaff, and kettle for live bait.

Gentle-box, and bags for worms.

A fishing-basket, creel, or game pouch.

A pair of pliers, a pair of scissors, and a penknife.
A book of artificial flies.
A book of general tackle.

RODS.

Choice rods are of the utmost consequence to the angler's success, and various instructions have been given by different authors for selecting proper kinds of wood for the purpose, and the method of making them; but as excellent rods of every description are now to be purchased in almost every part of the United Kingdon, I shall recommend such as will be generally useful, and may be procured without difficulty at any of the fishing-tackle shops in London.

In choosing a rod, be careful to examine if the joints fit securely, if it be perfectly straight when put together, and if it spring equally in all its parts, from the butt to the top, when bent.

That which is commonly termed a "general rod" will be found most useful to the traveller who has not an opportunity of carrying more than one with him at a time, it being so contrived that it may be used either for fly-fishing, trolling, or bottom fishing, as the butt of the rod is bored, and contains several spare tops, i. e., one for the fly, one for spinning the Minnow, one for the float, and another for trolling—the whole being conveniently packed up in a canvas bag.

Although this kind of rod will be found highly serviceable on many occasions, I would by no means recommend the use of it when you have an opportunity of employing separate and appropriate rods for the different kinds of angling. The rods used exclusively for fly-fishing should be as light as possible, consistent with strength, and if for throwing with one hand, not more than from twelve to fourteen feet long, and if with both hands, not more than from sixteen to eighteen feet. Indeed, a rod shorter than either of these would be found very convenient in a narrow, closely-wooded stream, where it is frequently necessary to force your fly with a short line under over-hanging bushes

I am acquainted with some excellent anglers in the north of England, who cannot be persuaded to use any other fly-rod than one composed of two pieces only, and spliced in the middle; but this is

inconvenient to carry, and the jointed rods are now brought to such perfection, that I feel assured they will answer every purpose of the spliced rods, besides being much more portable. The Irish fly-rods are screwed together at each joint, and are much more elastic than the English rods.

THE TROLLING ROD

Should be very strong, and not less than twelve nor more than sixteen feet in length, with large rings upon it, that the line may run freely.

The rod for spinning a Minnow or Bleak should be of bamboo cane, and from eighteen to twenty feet long, with a tolerably stiff top; the rings should be placed at a moderate distance from each other, and be of the middle size.

The *barbed rod*, for angling with the ledger-bait, should have a stiff top, and be about eleven or twelve feet in length; but for float-fishing it must be much lighter and something longer.

The rod for Roach and Dace should be of bamboo cane, and, if for bank-fishing, from eighteen to twenty feet long; but if for angling from a punt, not more than eleven or twelve feet. It must be very light, perfectly taper, and of a proper degree of elasticity, as the angler's success in Roach and Dace-fishing will depend upon his dexterity and quickness in striking when he has a bite. Many anglers never fish without running-tackle, that they may be always prepared to encounter a large fish; but they must not hope to meet with the same sport in Roach and Dace-fishing as those do who use a light rod without rings, and a short line, when the chance of striking your fish is much more certain.

LINES.

The best lines for running-tackle are composed of silk and hair, of different degrees of strength and thickness, according to the purpose for which they are intended. For Salmon-fishing, a strong winch or pirn, large enough to contain from eighty to one hundred yards of line, is requisite, and for Trout a brass reel, containing from thirty to forty yards of line, gradually tapering to a few hairs at the end, where a foot-link of gut containing the flies is to be fixed.

Silkworm gut lines are from two to four yards, and are used as lengths to be added to the line on the reel, either for fly or bottom-fishing.

Lines for trolling are of several kinds, some of twisted silk, and others of silk and hair, but that sold by the tackle-makers, called patent trolling-line, is in most general use. A strong reel, and from forty to sixty yards of line, are requisite.

Indian weed is a good material for bottom-tackle, but inferior to the silkworm gut.

Eel-lines, night-lines, and trimmers, may be purchased ready fitted up.

A winch, or reel, is used for running-tackle, and is generally made of brass, but I have seen them in Scotland made of wood, where they are called pirns; the multiplying reel was formerly much used, but from its liability to be out of order, a plain reel, without a stop, is now generally preferred. Reels are of various sizes, containing from twenty to one hundred yards of line.

Bleak and Minnow tackle are of endless variety in form and contrivance, almost every experienced angler having his own peculiar plan.

The paternoster is a line used for Pearch fishing, made of strong gut, and should be connected with a running-line by a fine steel swivel. It contains three hooks, the size Nos. 7, 8, or 9, placed at equal distances from each other; the first near the bottom, where a small plummet of lead is fixed to sink the line and the others each from eighteen inches to two feet apart. The hooks are so contrived by swivels as to revolve round the line, and thereby give play to the live Minnows with which they are to be baited.

FLOATS.

Much care and judgment are required in adapting your float to the various streams or waters in which you angle. A deep and rapid river will require a float that will carry from sixteen to twenty of No. 4 shot. If the stream be deep and the current gentle, a float carrying one-half that number of shot will be sufficiently heavy; and when the water is perfectly still, a very light quill-float, carrying two of No. 6

shot, should be used; and I may remark here, that the smaller your float, the fewer the number of shot, and the finer your bottom-tackle, the greater will be your success.

The tip-capped float is the best for pond-fishing and for gentle streams, as the line is confined at each end of the float by a cap, which enables you to strike at a fish with greater precision than with a plugged float, which has a wire ring at the bottom for the line to run through.

In shotting the line, I prefer a number of small shot to a few large ones, as they make less disturbance in the water.

Your line must be shotted till not more than the cap of your float is seen above the water, unless it should be very rough from wind or a rapid current, in which case something more of the float must swim above water.

The porcupine quill is a favorite float with some anglers, but for a moderate stream I prefer a swan's quill.

THE LANDING-NET AND GAFF.

The landing-net may be purchased so contrived as to unscrew from a socket in the handle—which should be four or five feet long—and a gaff or hook for landing Salmon, Pike, and large Trout, may also be bought to screw into the same socket, and both the net and gaff may be carried in your basket or creel till you reach the river side.

APPENDIX.—(B.)

THE FLY-FISHER'S APPARATUS.

From Hofland's British Angler's Manual.

A COMPLETE fly-fisher will make his own flies, and will find much amusement in the practice of this delicate art. It will be necessary that he should provide himself with the following materials to enable him to imitate the flies described heretofore :

HOOKS.

London, Kirby-sneck, and Limerick hooks, of all sizes. Of these, the Limerick hook is in the greatest general estimation ; but in the north of England, the Kirby-sneck hook is preferred for small hackle flies.

FEATHERS.

Cocks' and hens' hackles, of all colors ; those chiefly in use are red, ginger, coch-a-bonddu, black, dun, olive, grizzle, and white ; the latter for dying yellow, &c.

Peacock's herl, coppery colored, green, and brown.

Black ostrich's herl.

Gallino fowls' spotted feathers.

The feathers of the turkey, the grouse, ptarmigan, pheasant—cock and hen—woodcock, snipe, dotteril, landrail, starling, golden plover or peewit, wild mallard, bustard, sea-swallow, wren, jay, blackbird, throstle, blue pigeon, argus and silver pheasant.

Water-rat's fur, mole's fur, and hare's ear.

Mohair, dyed, of all colors.

Fine French sewing-silk, of all colors.

Flos silk, of all colors.

German wool, of all colors.

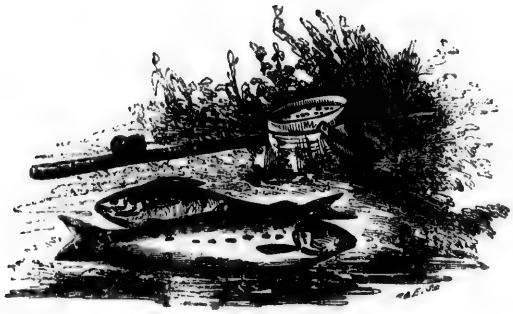
Gold and silver twist.

Silk twist, cobblers' and bees'-wax.

A pair of pliers, a pair of fine-pointed scissors, a small hand slide-vice, and a fine-pointed strong dubbing-needle.

Silkworm gut, from the finest to the strongest, and Salmon gut, single and twisted

Lengths of the white and sorrel hairs of stallions' tails.



APPENDIX.—(C.)

HOW TO COOK FISH

THE SALMON

Me judice, the king of fishes, is the best plain boiled. His richness is sufficient, his flavor so excellent, that, so far from being improved, his natural qualities are destroyed and overpowered, by anything of artificial condiment.

MY OWN RECEIPT FOR BOILING SALMON.

If you are ever so lucky as to catch a Salmon, where incontinently you can proceed to cook him, that is to say, in the wilderness, within ten yards of the door of your shantee, with the fire burning and the pot boiling—good!

Stun him at once by a heavy blow on the head; crimp him by a succession of cuts on each side, through the muscle, quite down to the back-bone, with a very sharp knife, in slashes parallel to the gill-cover. Then place him for ten minutes in a cold spring, or under the jet of a water-fall. In the meantime, keep your pot boiling, nay, but screeching with intense heat, filled with brine strong enough to bear an egg. Therein immerse him, having cut out the gills, opened the belly, and washed the inside, and boil him at the rate of seven minutes and a half to the pound; dish him, and, serving him with no sauce save a tureen-full of the water in which he has been boiled, proceed to eat him, with

no other condiment than a little salt and the slightest squeeze of a lemon. I do not object to cucumber sliced very fine, with a dressing of oil, three tablespoons to one of vinegar, salt, and black pepper *quantum suff;* but I regard green peas, or any other vegetable, with this grand fish, as a cockney abomination.

SOYER'S RECEIPT—SALMON AU NATUREL.

Clean and prepare as before; but, if he be not fresh enough to crimp, scale him, and proceed as follows:

"Put your fish in cold water, using a pound of salt to every six quarts of water; let it be well-covered with water, and set it over a moderate fire; when it begins to simmer, set it on the side of the fire. If the fish weighs four pounds, let it simmer half an hour—if eight pounds, three-quarters of an hour, and so on in proportion; dish it on a napkin, and serve lobster or shrimp-sauce in a boat."

SOYER'S LOBSTER-SAUCE FOR SALMON.

Put twelve table-spoonsful of melted butter into a stew-pan; cut a middling-sized hen-lobster into dice, make a quarter of a pound of lobster-butter with the spawn, thus: take out the spawn and pound it well in a mortar, then add a quarter of a pound of fresh butter, mix them well together, then rub it through a hair sieve; when the melted butter is upon the point of boiling, add the lobster-butter, stir the sauce round over the fire, until the butter is melted; season with a little essence of anchovy, the juice of half a lemon, and a quarter of a teaspoonful of cayenne; pass it through a tamis into another stew-pan, then add the flesh of the lobster. When hot, it is ready to serve where directed. This sauce must be quite red; if not red in the lobster, use live spawn.

SOYER'S SHRIMP SAUCE.

Make the melted butter as for the last, but finish with the essence of shrimps, and serve half-a-pint of pickled shrimps in the boat with it If no essence of shrimps, the anchovy sauce may be served with shrimps in it as a substitute, if no essence can be had.

SALMON A LA BEYROOT

Broil two slices of Salmon, in oiled paper, over a moderate fire; when they are done, peel the skin from the edge, and lay them on a dish without a napkin; have ready the following sauce: put one tablespoonful of chopped onions in a stew-pan, with one ditto of Chili vinegar, one of common vinegar, two ditto of Harvey sauce, two ditto of mushroom catsup, and twenty tablespoonsful of melted butter; let it reduce till it adheres to the back of the spoon, then add two tablespoonsful of essence of anchovy, and a small quantity of sugar, pour it over the fish, and serve it hot.

HOW TO COOK TROUT

My own Method.

This is the method of the woods, and in the woods I learnt it; but having learned, I practice it at home, considering the Trout one of the most delicious *morceaux*, when thus cooked, in the world. It must be cooked, however, in the open air, by a wood fire kindled on the ground or by a charcoal fire in a small Boston furnace.

Clean and scale your fish, open, clean and wash him internally; take for a one pound fish two small skewers of red cedar wood, upon each thread a piece of fat salt pork half-an-inch square; with these fasten the belly of the fish asunder, annex him by the tail to a twig of pliant wood, which suffer to bend over the fire so as to bring the fish opposite the blaze, place a large biscuit or a slice of thin dry toast under the drip of the gravy, cook quickly—for a two-pound fish, ten minutes will suffice—dish with the biscuit under him, and eat with salt and lemon-juice, or, if you please, with shrimp or lobster sauce, or a dash of Worcestershire or Harvey sauce, though I think these, for my own cheek, bad taste.

TROUT AU NATUREL.

A large Sea-Trout or Salmon-Trout is to be cleaned, cooked and eaten precisely as the Salmon in my first receipt. I conceive, myself, that any piquante or rich sauce overpowers the flavor of the fish, and

should therefore be eschewed; but those who favor such things may eat him with shrimp or lobster sauce as above.

HOW TO COOK PIKE.

Nobbs' Receipt for dressing a Pike.

Take your Pike and open him; rub him within with salt and claret wine; save the milt, and a little of the bloody fat; cut him in two or three pieces, and put him in when the water boils; put in with him sweet marjoram, savory, thyme, or fennel, with a good handful of salt; let them boil nearly half an hour. For the sauce, take sweet butter, anchovies, horse-radish, claret wine, of each a good quantity; a little of the blood, shalot, or garlic, and some lemon sliced; beat them well together, and serve him up.

Soyer's Receipt for Pike roasted.

This fish in France is found daily upon the tables of the first epicures, but the quality of the fish there appears much more delicate than here. But perhaps the reason of its being more in vogue there is, that other fish are more scarce; not being so much in use here—that is, in London—but in the country, where gentlemen have sport in catching them, they are much more thought of, and to them, perhaps, the following receipts may be the most valuable. To dress it plain it is usually baked, as follows: having well cleaned the fish, stuff it, and sew the belly up with packthread; butter a sauté-pan, put the fish into it and place it in the oven for an hour or more, according to the size of it; when done, dish it without a napkin, and pour anchovy sauce round it; this fish, previous to its being baked, must be trussed with its tail in its mouth, four incisions cut on each side, and well buttered over.

Pike à la Chambord.

The large fish are the only ones fit for this dish, (which is much thought of in France.) Have the fish well cleaned, and lard it in a square on one side with bacon, put it in a fish-kettle, the larded side upwards, and prepare the following marinade: slice four onions, one carrot, and one turnip, and put them in a stew-pan with six bay-leaves,

six cloves, two blades of mace, a little thyme, basil, a bunch of parsley, half-a-pound of lean ham, and half-a-pound of butter; pass it over a slow fire twenty minutes, keeping it stirred; then add half a bottle of Madeira wine, a wineglassful of vinegar, and six quarts of broth; boil altogether an hour, then pass it through a sieve, and pour the liquor into the kettle over the fish; set the fish on the fire to stew for an hour or more, according to the size, but take care the marinade does not cover the fish, moisten the larded part, now and then, with the stock, and put some burning charcoal on the lid of the kettle; when done, glaze it lightly, dish it without a napkin, and have ready the following sauce: put a pint of the stock your fish was stewed in—having previously taken off all the fat—into a stew-pan, with two glasses of Madeira wine, reduce it to half, then add two quarts of brown sauce, keep it stirred over the fire till the sauce adheres to the back of the wooden spoon, then add the roes of four carp or mackerel—cut in large pieces, but be careful not to break them—twenty heads of very white mushrooms, twenty cockscombs, twelve large quenellings of whiting, and finish with a tablespoonful of essence of anchovies and half a one of sugar, pour the sauce round the fish, arranging the garniture with taste, add twelve crawfish to the garniture, having previously taken off all the small claws; serve very hot.

This dish, I dare say, will be but seldom made in this country, on account of its complication, but I thought proper to give it on account of the high estimation in which it is held in France; I must, however, observe, that I have omitted some of the garniture which would make it still more expensive, and if there should be any difficulty in getting what remains, the sauce is very good without.

Pike en matelote.

Stuff and bake the fish as before; when done, dress it without a napkin, and pour a sauce matelote in the middle and round the fish, and serve very hot. Or the fish may be stewed as in the last.

Pike à la Hollandaise.

Boil the fish in salt and water, in the same manner as Cod-Fish; drain it well, dish it without a napkin, pour a sauce Hollandaise over it

Small Pike à la Meunière.

Crimp a small Pike, it must not weigh more than two pounds, but smaller if you can get it, and proceed exactly as for Sole à la meunière, but allow it more time.

Pike with caper sauce.

Boil the fish as before, and have ready caper sauce made as follows: put fifteen tablespoonsful of melted butter in a stew-pan, and when it boils add a quarter of a pound of fresh butter; when it melts, add two tablespoonsful of liaison; let it remain on the fire to thicken, but do not let it boil; moisten with a little milk if required, then add two tablespoonsful of capers, and pour over the fish.

Pike à la Maître d'Hôtel.

Boil the fish as usual, and dish it without a napkin; then put twelve tablespoonfuls of melted butter in a stew-pan; and when it is upon the point of boiling, add a quarter of a pound of maître d'hôtel butter, and when it melts pour over and round the fish; serve very hot.

Pike à la Egyptienne.

Cut two onions, two turnips, one carrot, one head of celery, and one leek into slices; put them into a large stew-pan with some parsley, thyme, bay-leaves, and a pint of port wine; then have your fish ready trussed, with its tail in its mouth; put it into the stew-pan, with the vegetables; add three pints of broth, and set it on a slow fire to stew, with some live charcoal upon the lid; try, when done, by running the knife close in to the back bone; if the meat detaches easily, it is done; take it out, and place on a baking sheet; dry it with a cloth, then egg and bread-crumb it; put it in the oven, and salamander it a light brown; then put twenty tablespoonsful of white sauce in a stew-pan, with eight of milk, and reduce it five minutes; then add four gherkins, the whites of four hard-boiled eggs, and two truffles, cut in very small dice; finish with two tablespoonsful of essence of anchovies, the juice of half a lemon, and four pats of butter; dress the fish without a napkin, and sauce over.

Fillets of Pike en matelote.

If for a dinner for twelve, fillet four small Pike; egg and bread-

crumb, and fry in oil; dish them round on a border of mashed potatoes, previously cutting each fillet in halves, and serve sauce matelote in the centre.

Fillets of Pike à la Meunière.

Fillet four Pike as above, cut each fillet in halves, rub some chopped eschalot into them, dip them in flour, broil them; when done, sauce as for Sole à la meunière. Observe, if you happen to live in the country where Pike is plentiful, you may dish the fillets in as many ways as Soles, or any other fish; but I have omitted giving them here, thinking it useless to fill a useful book with so many repetitions; we have several ways of dressing Pike to be eaten cold in France, which I have also omitted, as they would be quite useless in this country.

HOW TO COOK PEARCH.

The best mode of cooking a Pearch, under a pound weight, is by broiling it.

Small Pearch will serve to make water-souchy thus: Scale, gut, and wash your Pearch; put salt in your water; when it boils put in the fish, with an onion cut in slices, and seperated into rings; a handful of parsley, picked and washed clean; put in as much milk as will turn the water white; when your fish are done enough, put them in a soup dish, and pour a little of the water over them, with the parsley, and the onions; then serve them up with parsley and butter in a boat.

Large Pearch may be crimped and boiled in the same way.

Soyer's Receipt for Pearch à la Hollandaise.

Have three middling-sized fishes ready prepared for cooking; then put two ounces of butter, two onions, in slices, one carrot, cut small, some parsley, two bay-leaves, six cloves, and two blades of mace in a stew-pan; pass it five minutes over a brisk fire, then add a quart of water, two glasses of vinegar, one ounce of salt, and a little pepper; boil altogether a quarter of an hour, and pass it through a sieve into a small fish-kettle; then lay the fishes into it, and let them stew twenty or thirty minutes over a moderate fire; dress them on a dish without a napkin, and pour a sauce Hollandaise over them.

Pearch à la Maître d'Hôtel.

Prepare and cook your fish as above; then put twenty tablespoonsful of melted butter in a stew-pan, and when it is upon the point of boiling, add a quarter of a pound of Maître d'Hôtel butter, and pour the sauce over the fish, which dress on a dish without a napkin.

Small Pearches en water souchet.

Cut four small fishes in halves, having previously taken off all the scales, and proceed precisely as for Flounders en water souchet.

Small Pearches frits au beurre.

Scale and well dry six Pearches, and make incisions here and there on each side of them; then put a quarter of a pound of butter into a sauté-pan, season your fishes with pepper and salt, put them in the sauté-pan and fry them gently, turning them carefully; when done, dress them on a napkin, garnish with parsley, and serve without sauce.

In my opinion, they are much better cooked in this way than boiled or stewed; large fish may also be done this way, but they require more butter, and must cook very slowly.

HOW TO COOK CARP.

Izaak Walton's receipt.

But first, I will tell you how to make this Carp, that is so curious to be caught, so curious a dish of meat as shall make him worth all your labor and patience. And though it is not without some trouble and charges, yet it will recompense both. Take a Carp—alive if possible; scour him, and rub him clean with water and salt, but scale him not; then open him, and put him with his blood and liver, which you must save when you open him, into a small pot or kettle; then take sweet marjoram, thyme, or parsley, of each a handful; a sprig of rosemary, and mother-of-savory; bind them into two or three small bundles, and put them to your Carp, with four or five whole onions, twenty pickled oysters, and three anchovies. Then pour upon your Carp as much claret wine as will only cover him; and season your claret well with salt, cloves and mace, and the rind of oranges and lemons. That done, cover your pot, and set it on a quick fire till it be sufficiently boiled. Then take out the Carp, and lay it with

the broth into the dish, and pour upon it a quarter of a pound of the best fresh butter, melted and beaten with a half-a-dozen spoonsful of the broth, the yolks of two or three eggs, and some of the herbs shred; garnish your dish with lemons, and so serve it up, and much good to you.

Soyer's Receipt for Carp en matelote.

Have your fish ready cleaned, and make four or five incisions on each side; then put two sliced onions, three sprigs of thyme and parsley, and half-a-pint of port wine in a stew-pan, or small fish-kettle; season the fish with pepper and salt, lay it in the stew-pan, add four pints of broth, and place it on a slow fire to stew for an hour—which will be sufficient for a fish of five pounds weight—or more, in proportion to the size; when done, dress it on a dish, without a napkin; drain it well, and serve a matelote sauce over it; only use some of the stock from the fish, having previously taken off all the fat, instead of plain broth, as directed in that article.

Carp à la Genoise.

Prepare your fish as above, and lay it in your fish-kettle, with two ounces of salt, half a bottle of port wine, two onions, two turnips, one leek, one carrot, cut in slices, three bay-leaves, six cloves, two blades of mace, and a sprig of parsley, cover the fish with white broth; stew it as before, dress it without a napkin, prepare a sauce Genoise and pour over it.

Stewed Carp à la Marquise.

Cook the fish as above, and when done, dress it on a dish without a napkin, and have ready the following sauce: put twenty tablespoonsful of white sauce in a stew-pan, reduce it over a fire until rather thick, then add a gill of whipt cream, two tablespoonsful of capers, and two of chopped gherkins; pour over the fish, then sprinkle two tablespoonsful of chopped beet-root over it, and serve.

Carp with caper sauce.

Cook the fish as above, and dress it without a napkin; then put twenty-five tablespoonsful of melted butter into a stew-pan, and when

nearly boiling add a quarter of a pound of fresh butter; stir it till the butter melts, then add four tablespoonsful of capers, and pour over. This sauce must be rather thick.

Carp fried.

Open the fish down the back with a sharp knife from the head to the tail, cutting off half the head, so that the fish is quite flat; break the back-bone in three places, but allow the roe to remain; then dip the fish in flour, and fry it in hot lard; dress it on a napkin, garnish with parsley, and serve plain melted butter, well-seasoned, in a boat.

HOW TO COOK EELS.

Eels fried.

Cut the Eels in pieces about three inches long, dip them in flour, egg and bread-crumb, and fry them in very hot lard, dress them on a napkin, garnish with parsley, and serve shrimp-sauce in a boat.

Eels à la Tartare.

Cut the Eels and fry as above, have ready some Tartare sauce upon a cold dish, lay the Eels upon it, and serve immediately; should the Eels be large, they must be three-parts stewed before they are fried; dry them upon a cloth previous to bread-crumbing them.

Spitchcocked Eels.

Take the bones out of the Eels by opening them from head to tail, and cut them in pieces about four inches long, throw them into some flour, then have ready upon a dish about a couple of handfuls of bread-crumbs, a tablespoonful of chopped parsley, a little dried thyme, and a little cayenne pepper, then egg each piece of Eel and bread-crumb them with it, fry them in very hot lard, dish them on a napkin, and serve shrimp-sauce in a boat.

Stewed Eels.

Cut the Eels in pieces as before, and tie each piece round with pack-thread, then put them into a stew-pan with an onion, a tablespoonful of white wine, three cloves, three whole allspice, a bunch of parsley, thyme, and bay-leaf, and a little white broth, sufficient to cover them;

place them over a moderate fire, and let them stew gently for half an hour or more, if required—according to the size of the Eel—take them out, drain them on a napkin, dish them without a napkin, and have ready the following sauce: put a teaspoonful of chopped onions into a stew-pan with four tablespoonsful of white wine, and eight ditto of brown sauce, let it boil gently for a quarter of an hour, keeping it stirred, then add a teaspoonful of essence of anchovies and a little sugar, and pour over your Eels.

Eels en matelote.

Stew the Eels as above, dress them without a napkin, and pour a sauce matelote over them. They may also be served with a sauce à la Beyrout.

HOW TO COOK SHAD.

Broiled Shad.

Scale, clean, cut off the head and fins, split down the back, broil quickly over a charcoal fire; broil the roe separately in the same manner; serve on a hot dish, garnished with the roe and fried parsley. Eat with drawn butter, anchovy, or shrimp sauce.

To Boil Shad.

Scale, open, clean, and wash your fish; boil him quickly, wrapped in a napkin, in boiling water; serve upon a napkin, garnished with fried parsley; eat with caper sauce.

Sea-shore receipt for Roasted Shad.

Split your fish down the back after he is cleaned and washed, nail the halves on shingles or short board; stick them erect in the sand round a large fire; as soon as they are well-browned, serve on whatever you have got; eat with cold butter, black pepper, salt, and a good appetite.

This is a delicious way of cooking this fine fish.

HOW TO COOK TAUTOG.

Clean, score, and broil your Black-Fish quickly; lay it in a stew-

pan, with a bottle of port wine, two sliced onions, six or seven cloves, and a few pepper-corns; add an eschalot and some cayenne; pour in a quart of weak veal-broth, stew gently for an hour.

HOW TO COOK SQUETEAGUE.

Boil when cleaned, and serve with shrimp sauce, precisely as Salmon or Trout.

HOW TO COOK SEA BASS.

Boiled.

Boil plain, as above; serve with shrimp sauce, caper sauce, or parsley and butter.

Broiled.

Broil quickly over a charcoal fire; serve with matelote sauce, as follows:

Sauce Matelote.

Peel about twenty button onions, then put a teaspoonful of powdered sugar in a stew-pan, place it over a sharp fire, and when melted and getting brown, add a piece of butter the size of two walnuts, and your onions, pass them over the fire until rather brown; then add a glass of sherry, let it boil, then add a pint of brown sauce and ten spoonfuls of consommé, simmer at the corner of the fire until the onions are quite tender, skim it well; then add twenty small quenelles, ten heads of mushrooms, and a teaspoonful of essence of anchovies, one of catsup, one of Harvey sauce, and a little cayenne pepper. Serve where directed.

HOW TO COOK KING-FISH.

Broil over a quick fire, serve plain, eat with anchovy or shrimp sauce.

Fry in olive oil, serve plain, eat with salt and red pepper.

HOW TO COOK SHEEP'S-HEAD.

Rub it over with salt and lemon before putting it in the water. To every six quarts of water add one pound of salt. Boil a ten-pound

fish about twenty minutes. Serve on a napkin, garnish with parsley, eat with shrimp or lobster sauce.

HOW TO COOK HALIBUT.

Soyer's Receipt for Halibut to boil.

A Halibut must be well rubbed over with salt and lemon before it is put in the water; have ready a large Halibut-kettle half-full of cold water, and to every six quarts of water put one pound of salt, lay the fish in, and place it over a moderate fire; a Halibut of eight pounds may be allowed to simmer twenty minutes or rather more; thus it will be about three-quarters of an hour altogether in the water; when it begins to crack very slightly, lift it up with the drainer, and cover a clean white napkin over it; if you intend serving the sauce over your fish, dish it up without a napkin; if not, dish it upon a napkin, and have ready some good sprigs of double parsley to garnish it with, and serve very hot.

Halibut à la Crème.

Cook the Halibut as above, and dish it without a napkin—but be careful that it is well drained before you place it on the dish, and absorb what water runs from the fish with a napkin, for that liquor would spoil your sauce, and cause it to lose that creamy substance which it ought to retain; this remark applies to all kinds of fish that is served up with the sauce over it; then put one pint of cream on the fire in a good-sized stew-pan, and when it is nearly simmering add half-a-pound of fresh butter, and stir it as quickly as possible until the butter is melted, but the cream must not boil; then add a liaison of three yolks of eggs, season with a little salt, pepper, and lemon-juice, pour as much over the Halibut as will cover it, and serve the remainder in a boat; or if not approved of, dish the fish on a napkin, garnish with parsley, and serve the sauce in a boat This sauce must not be made until the moment it is wanted.

Halibut Sauce homard.

Cook the Halibut as before, then take an ounce of lobster spawn and pound it in a mortar with a quarter of a pound of fresh butter, rub it through a hair sieve with a wooden spoon upon a plate; have

ready a pint of good melted butter nearly boiling, into which put the red butter, and season with a teaspoonful of essence of anchovy, a little Harvey sauce, cayenne pepper, and salt, then cut up the flesh of the lobster in dice and put in the sauce; serve it in a boat very hot.

Halibut à la Hollandaise.

Cook the Halibut as before, and dish without a napkin; then put the yolks of four eggs in a stew-pan with half-a-pound of fresh butter, the juice of a lemon, half a teaspoonful of salt, and a quarter of one of white pepper; set it over a slow fire, stirring it the whole time quickly; when the butter is half-melted take it off the fire for a few seconds, still keeping it stirred, till the butter is quite melted, then place it again on the fire till it thickens, then add a quart of melted butter, stir it again on the fire, but do not let it boil, or it would curdle and be useless; then pass it through a tammie into another stew-pan, make it hot in the bain marie, stirring all the time; pour it over the fish or serve in a boat. The sauce must be rather sharp; add more seasoning if required.

Halibut à la Mazarine.

Cook the fish as above, then have all the spawn from two fine hen lobsters; if not sufficient, get some live spawn from the fishmonger's, making altogether about two ounces; pound it well in the mortar and mix it with half-a-pound of fresh butter, rub it through a hair sieve, place it upon ice until firm, then put it in a stew-pan with the yolks of four eggs, a little pepper, half a teaspoonful of salt, and four tablespoonsful of lemon-juice, place it over the fire, and proceed as for the sauce Hollandaise, adding the same quantity of melted butter, and two teaspoonfuls of essence of anchovy, pass it through a tammie into a clean stew-pan to make it hot, dish the fish without a napkin, soaking up the water in the dish with a clean cloth, and pour the sauce over it; be careful the sauce does not boil, or it will curdle.

This dish is one of the most elegant, and is the best way of dressing a Halibut; for I have always remarked, that notwithstanding its simplicity, it has given the greatest satisfaction, both for its delicateness and appearance, causing no trouble—only requiring care.

Halibut en matelote Normande.

Procure a smallish Halibut, one weighing about ten pounds would be the best; cut off part of the fins, and make an incision in the back, butter a sauté-pan, large enough to lay the Halibut in quite flat, and put three tablespoonsful of chopped eschalots, three glasses of sherry or Madeira, half a teaspoonful of salt, a little white pepper, and about half-a-pint of white broth into it, then lay in the Halibut and cover it over with white sauce, start it to boil over a slow fire, then put it into a moderate oven about an hour, try whether it is done with a skewer; if the skewer goes through it easily it is done; if not, bake it a little longer, then give it a light brown tinge with the salamander, place the fish upon a dish to keep it hot, then put a pint of white sauce in the sauté-pan and boil it fifteen minutes, stirring it all the time, then pass it through a tammie into a clean stew-pan, and add a little cayenne pepper, two tablespoonsful of essence of anchovies, two dozen of oysters, blanched, two dozen of small mushrooms, two dozen quenelles, six spoonsful of milk, and a teaspoonful of sugar, reduce it till about the thickness of buchamel sauce, then add eight tablespoonsful of cream and the juice of a lemon, pour over the Halibut; have ready twenty croûtons of bread cut triangularly from the crust of a French roll, and fried in butter; place them round the dish, and pass the salamander over it, and serve.

Halibut en matelote vierge.

Boil a Halibut as before, dish it up without a napkin, and have ready the following sauce: chop two onions very fine and put them in a stew-pan with four glasses of sherry, a sole cut in four pieces, two cloves, one blade of mace, a little grated nutmeg, some parsley, and one bay-leaf; boil altogether five minutes, then add a quart of white sauce, boil twenty minutes, stirring all the time, then put a tammie over a clean stew-pan, and colander over the tammie, pass the sauce, take the meat off the sole and rub it through the tammie with two spoons into the sauce, add half a pint of broth, boil it again until it is rather thick, season with a teaspoonful of salt, one of sugar, the juice of a lemon, and finish with half-a-pint of cream whipped, mix it quickly and pour over the fish; garnish with white-bait and fried oysters, that have been egged and bread-crumbed; or if there is no white-bait, smelts will do.

Halibut à la Réligieuse.

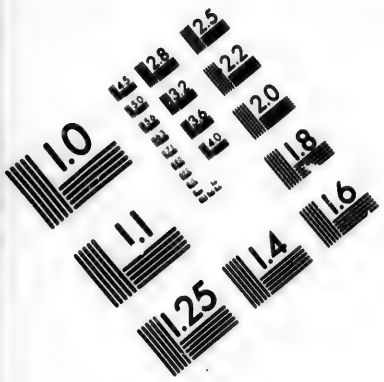
Dress the Halibut as before, and cover with Hollandaise sauce; chop some Taragon chervil, and one French truffle, which sprinkle over it; garnish with hard-boiled eggs cut in four lengthwise and laid round.

Halibut à la Cremè; gratiné.

Put a quarter of a pound of flour in a stew-pan, mix it gently with a quart of milk, be careful that it is not lumpy, then add two eschalots, a bunch of parsley, one bay-leaf, and a sprig of thyme tied together, for if put in loose it would spoil the color of your sauce, which should be quite white, then add a little grated nutmeg, a teaspoonful of salt and a quarter ditto of pepper, place it over a sharp fire and stir it the whole time, boil it till it forms rather a thickish paste, then take it off the fire and add half-a-pound of fresh butter and the yolks of two eggs, mix them well into the sauce and pass it through a tammie; then having the remains of a Halibut left from a previous dinner, you lay some of the sauce on the bottom of a dish, then a layer of the Halibut, without any bone, season it lightly with pepper and salt, then put another layer of sauce, then fish and sauce again until it is all used, finishing with sauce; sprinkle the top lightly with bread-crumbs and grated Parmesan cheese; put it in a moderate oven half an hour, give it a light brown color with the salamander, and serve it in the dish it is baked in.

Halibut à la Poissonière.

Boil a Halibut as before, and take it up when only one-third cooked, then put in a large sauté-pan or baking-sheet forty button onions peeled and cut in rings, two ounces of butter, two glasses of port wine, the peel of half a lemon, and four spoonsful of chopped mushrooms, then lay in the Halibut, and cover with a quart of brown sauce, set it in a slow oven for an hour, then take it out and place it carefully on a dish, place the fish again in the oven to keep it hot, then take the lemon-peel out of the sauce and pour the sauce into a stew-pan, reduce it till rather thick, then add twenty muscles, (blanched,) twenty heads of mushrooms, and about thirty fine prawns; when ready to serve add one ounce of anchovy butter, a tablespoonful of sugar, and a little



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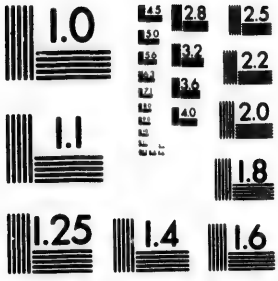

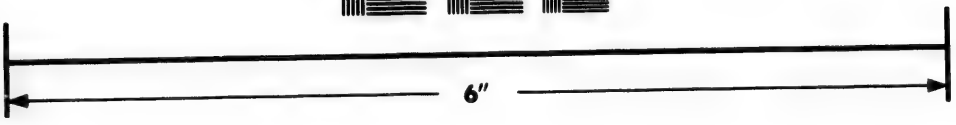

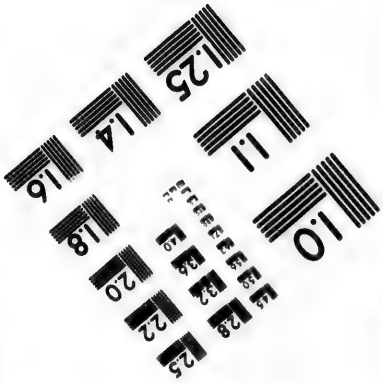

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cayenne pepper, stir it in quickly, but do not let it boil; pour the sauce over the fish, and serve very hot.

Halibut à la Crème d'Anchois.

Boil the Halibut and dish it without a napkin, then pour the following sauce over it and serve immediately: put a quart of melted butter into a stew-pan, place it on the fire, and when nearly boiling add six ounces of anchovy butter, and four spoonsful of whipped cream, mix it quickly, but do not let it boil; when poured over the fish sprinkle some chopped capers and gherkins over it.

Small Halibut à la Meúnière.

Crimp the Halibut by making incisions with a sharp knife, about an inch apart, in the belly part of the fish, then rub two tablespoonsful of chopped onions and four of salt into the incisions, pour a little salad oil over it, and dip it in flour, then put it on a gridiron a good distance from the fire—the belly downwards—let it remain twenty minutes, then turn it by placing another gridiron over it, and turning the fish over on to it, place it over the fire for about twenty-five minutes, or longer if required; when done place it upon a dish and have ready the following sauce: put six ounces of butter in a stew-pan, with ten spoonsful of melted butter, place it over the fire, moving the stew-pan round when very hot, but not quite in oil, add a liaison of two yolks of eggs, a little pepper, salt, and the juice of a lemon, mix it quickly, and pour over the fish; serve directly and very hot. The fish must be kept as white as possible. For the above purpose the Halibut should not exceed eight pounds in weight.

Halibut à la gratin Provençale.

This dish is made from fish left from a previous dinner. Put two tablespoonsful of chopped onions, and two of chopped mushrooms into a stew-pan with two tablespoonsful of salad oil; place it over a moderate fire five minutes, stirring it with a wooden spoon; then add three pints of brown sauce, and reduce it one-third, then add a clove of scraped garlic, a teaspoonful of Harvey sauce, one of essence of anchovy, a little sugar, a little cayenne, and two yolks of eggs, pour a little sauce on the dish you serve it on, then a layer of fish lightly

seasoned with pepper and salt, then more sauce and fish again, finishing with sauce; sprinkle bread-crumbs over it and place it in a moderate oven half-an-hour, or till it is very hot through, brown it lightly with the salamander and serve very hot. The garlic may be omitted if objected to, but it would lose the flavor from which it is named.

HOW TO COOK FLOUNDERS.

Soyer's Receipt for Flounder en matelote Normande.

Cut the fins off a fine fresh Flounder, and make an incision down the back close to the bone, in which put some force-meat of fish, well seasoned with chopped eschalots and parsley, then butter a sauté-pan very lightly, and put a teaspoonful of chopped eschalots into it with two glasses of white wine; lay the Flounder into it and season with a little pepper and salt, then cover it with some bechamel sauce, and put it into a moderate oven for about twenty minutes or half an hour —but try whether it is done with a skewer—brown it lightly with the salamander; then take up the Flounder, dish it without a napkin, and make the sauce as follows: put six spoonsful of white sauce in the sauté-pan with six ditto of milk, let it boil four minutes, keeping it stirred, then add one dozen oysters blanched, one dozen quenelles of whiting, one dozen mushrooms, half a teaspoonful of essence of anchovies, and four tablespoonsful of cream, with a little cayenne pepper and sugar; pour the sauce over and round the fish, pass the salamander again over it, and garnish round with fried bread cut in small triangles. The sauce may be passed through a tammie before the garniture is added, if required. Fried smelts are frequently served as garniture around it.

Flounder à la Poltaise.

Trim a fine Flounder and make an incision down the back, clearing the meat from the bone, then melt two ounces of butter, and mix with it a teaspoonful of chopped eschalots, one of chopped mushrooms, one of chopped parsley, and a glass of sherry; put the Flounder in a dish, and pour the butter, etc., over it; sprinkle a few bread-crumbs on it, and put it in the oven twenty minutes or half an hour; when done, pour a little anchovy sauce over it, and brown it lightly with the salamander.

Flounder aux fines herbes.

Boil a Flounder—if the Flounder is very fresh it may be put in boiling water, but it is best to let it only simmer—in salt-and-water, and dish it without a napkin; have ready the following sauce: put in a stew-pan six teaspoonsful of chopped onions and a piece of butter, fry the onions a light brown, then add eight tablespoonsful of brown sauce, and let it boil at the corner of the stove ten minutes, then add a teaspoonful of chopped mushrooms, half ditto of chopped parsley, one ditto of essence of anchovies, and the juice of a quarter of a lemon; pour it over the fish and serve. This sauce must be rather thick, but not too much so.

HOW TO COOK HADDOCK.

Soyer's Receipt for common Haddock, plain.

This is a very serviceable, light, wholesome fish, and may be obtained, like Soles or Whitings, at any time of the year; to dress them plain, put them in boiling water well salted, and let them simmer about twenty minutes, or according to the size, dress on a napkin, and serve shrimp sauce in a boat.

Haddock à la Walter Scott.

Put two tablespoonsful of chopped onions, one ditto of Harvey sauce, one ditto of catsup, one ditto of sherry, and twenty ditto of melted butter into a middling-sized stew-pan, place it over the fire and let it boil fifteen minutes, keeping it stirred, then have ready a good-sized Haddock, cut in four pieces, put it into the stew-pan with the sauce, place it over a slow fire for twenty minutes, or longer if necessary; when done, dress it on a dish without a napkin; reduce the sauce a little more if required, then add a little sugar and essence of anchovy, pour it over the fish and serve.

Fillets of Haddock à la St. Paul.

Fillet your fish the same as a Whiting, dip the fillets in flour, egg, and bread-crumb, and fry in hot lard, or oil, in a sauté-pan, dress them on a napkin, garnish with fried water-cress, and serve with two ounces of anchovy butter melted, but not boiled, in a boat.

Fillets of Haddock à la Hollandaise.

Fillet your fish as above, and proceed as for fillets of Whiting á la Hollandaise.

HOW TO COOK WHITINGS.

Soyer's Receipt for Whitings, to fry them.

Every person knows the delicacy of this fish, and its lightness as food, especially invalids; it is generally well received at all tables: to fry them well, dry them in a cloth, then throw them in flour, egg and bread-crumb, fry them in hot lard, observing the directions for frying Soles; serve them on a napkin with shrimp-sauce in a boat, and garnish with parsley.

Whiting au gratin.

Have the Whitings skinned, with their tails turned into their mouths; butter a sauté-pan and put in the Whitings, with a tablespoonful of chopped onions and four tablespoonsful of brown sauce over each; sprinkle bread-crumbs over them, and a little clarified butter, and put them in a moderate oven half an hour; take them out and dress them on a dish without a napkin; then put twelve tablespoonsful more brown sauce into the sauté-pan, with a teaspoonful of chopped mushrooms, one ditto chopped parsley, one ditto essence of anchovy, a little pepper, salt, and sugar, boil ten minutes, pour round the fish, and pass the salamander over them.

Whitings broiled.

Have the fish skinned and curled round, flour it, and lay it on the gridiron over a moderate fire; it will take about twenty minutes; dish it on a napkin, garnish with parsley, and serve plain melted butter in a boat. Season when near done.

Whitings boiled à la Maître d'Hôtel.

Broil the fish as above, dish them without a napkin, have six tablespoonsful of melted butter in a stew-pan, put it to boil, then add two ounces of maître d'hôtel butter, stir it till it is melted, but do not let it boil, and pour over the fish.

Fillets of Whitings fried.

Take the fillets of six small Whitings which have not been skinned, dip them in flour, egg, and bread-crumb them, and fry in very hot lard; garnish with fried parsley, and serve with sauce Hollandaise in a boat.

Fillets of Whitings à la Hollandaise.

Fillet six Whitings as above, cut them in halves, then butter a sauté-pan, and lay in the fillets, skin side downwards; season with a little pepper, salt, and lemon-juice, place them over a slow fire five minutes, turn them and place them again on the fire; when done, dish them round on a dish, and pour some sauce Hollandaise over them

Fillets of Whitings à l'Italienne.

Fillet and dress the fish as in the last, adding chopped parsley to the seasoning, and make the sauce as for Filets de Soles à l'Italienne.

Whiting à l'Huile.

Fry the Whiting in very hot salad oil, instead of lard, of a very light brown color; dish it on a napkin, garnish with fried parsley, and serve shrimp-sauce in a boat

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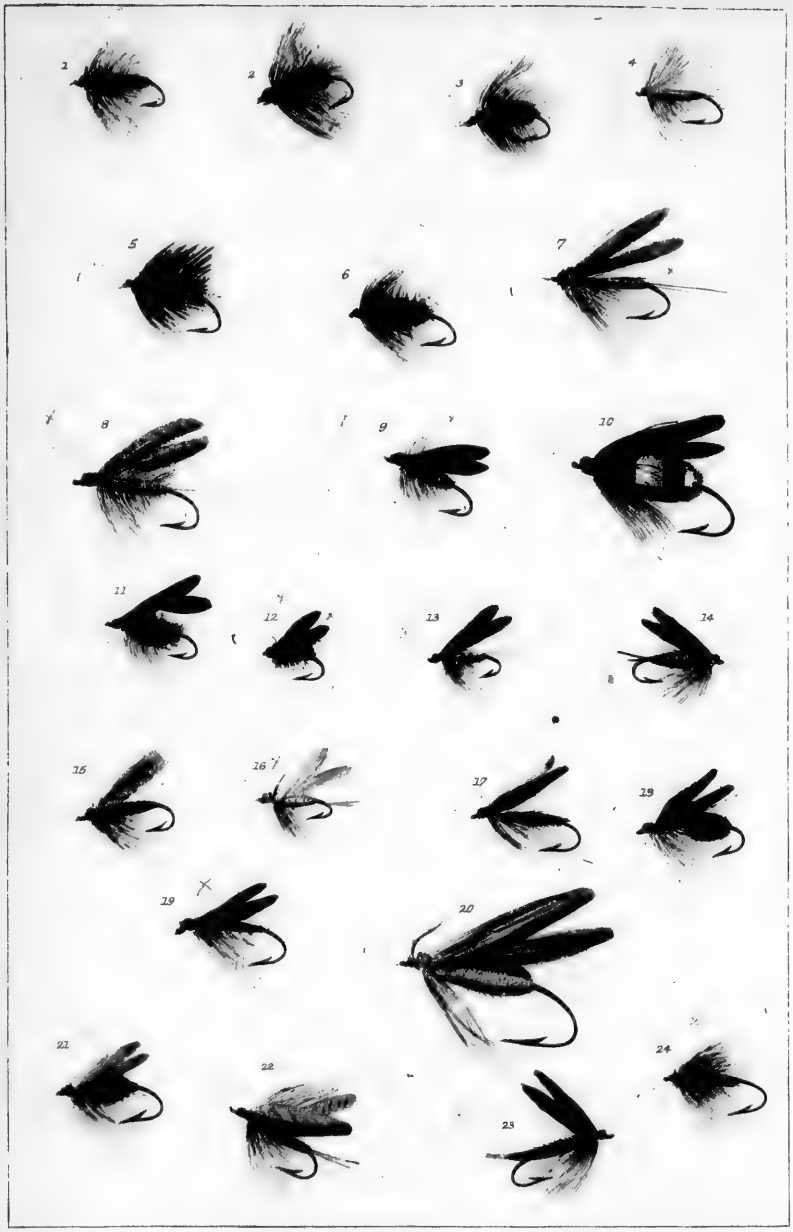
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SUPPLEMENT

TO

FRANK FORESTER'S

FISH AND FISHING

OF THE

UNITED STATES

AND

BRITISH PROVINCES OF NORTH AMERICA.

BY

WILLIAM HENRY HERBERT,

AUTHOR OF

THE FIELD SPORTS OF NORTH AMERICA,' 'FRANK FORESTER AND HIS FRIENDS,' ETC.

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2. PEACOCK PALMER HACKLE.
3. BLACK SILVER PALMER.
4. YELLOW PALMER HACKLE.
5. BLACK PALMER HACKLE.
6. BLACK PALMER HACKLE, Ribbed with Gold.
7. GREEN DRAKE, OR MAY FLY.
8. GREY DRAKE, OR MAY FLY.
9. COW DUNG.
10. BEE FLY.
11. BLACK GNAT.
12. HARE'S EAR.
13. COCK TAIL.
14. WHIRLING DUN.
15. KINGDOM FLY.
16. WHITE GNAT.
17. BLUE DUN.
18. RED ANT.
19. GOLD SPINNER.
20. WHITE MOTH.
21. GOVERNOR.
22. MARCH BROWN.
23. STONE FLY.
24. WILLOW FLY

INTRODUCTORY REMARKS.

On coming to revise the body of this work for a second edition, it was found, as might naturally be expected in a book embracing so large a field, that some errors had crept in, of commission, but yet more of omission; that some opinions with regard to fishes, unknown to the writer through his own observation, quoted from others, are, as verified by his own experience, incorrect; and that some few things stated as facts, when tried by the same test, are incorrect.

To set these right in the body of the work, would have rendered it necessary to reprint and re-stereotype the whole volume; as, by the insertion of new matter, the paging would have been all thrown out of order, and many whole pages would have been entirely destroyed, merely in order to rectify a single word.

I have therefore judged it best to throw what new information I have gained, into the form of a Supplement; embodying therein the correction of all erroneous opinions which, through want of information, or misinformation, I have fallen into; and adding farther instructions with regard to the implements, and the art of angling.

On Trolling for Lake Trout, and on Fishing with the Fly, very considerable additions will be found in this edition; as well as a Table explaining the seasons, bait, &c., of the principal salt-water fishes of our waters.

I had hoped to have been able to insert some information concern-

ing the more interesting sea-fish of the Southern States; but having waited as long as it was possible, for a number of specimens of which I had a promise from a friend in Charleston, South Carolina, I am very reluctantly compelled to go to press without that advantage, and am precluded from doing much more than naming what I learn to be the best and gamest of the southern species.

In this Supplement, I shall adhere to the plan adopted in the Volume, of dividing it into two parts, one treating of the structure, habits, and classification of the fishes; the other of the implements, the materials, and the art of angling.

The Salmon family will claim—as of the Volume itself, so of the Supplement also—the larger portion. Of this interesting group, the proper Salmons, I have herein inserted descriptions of six new species peculiar to the Columbia and other rivers of the Pacific coast, now growing into so great importance; and of the sub-genus *Coregonus*, of the same group, I have two new varieties from the north-western lakes. Concerning the several varieties of Lake Trout, I have cause materially to modify opinions expressed heretofore; and have succeeded in collecting much new information as to their habits, quality, instincts, and the mode of capturing them.

To the various friends who have assisted me with advice, information, and friendly criticism, I take this opportunity of again expressing my gratitude, and of putting it on record how much is due to them of the increased value of this edition.

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PART I.

THE

GAME FISHES

OF

North America.

ABDOMINAL
MALACOPTERYGII. SALMONIDÆ.

THE SALMON.

THE COMMON SALMON—THE TRUE SALMON.

Salmo Salar; Auctorum.

I STATED in the body of this work, that the True Salmon was wont, in former years, to run up into Seneca, Cayuga, and others of the small lakes of central New York, and expressed a doubt whether it was not now prevented from doing so, by the obstructions in the Oswego river.

In the course of a visit to that interesting region, during the past autumn, I had an opportunity of verifying this doubt; and I found, as indeed I expected, that the True Salmon has ceased to exist in those beautiful waters.

It is with great pleasure, however, that I lay before my readers an enactment for the preservation of that noble fish, just passed by the Supervisors of the county of Oswego, in conformity with the act of the State Legislature, committing the care of Game, and the passing of Game laws, to those Boards throughout the country.

This act is precisely what it should be, and reflects the highest credit on the liberality, wisdom, and energy of the Board which enacted it. I only regret that its provisions extend only to a single river; but I trust that this defect will be amended, and that the Oswego River, and the Seneca, Cayuga, and other outlets will receive the same privilege, which would doubtless lead to the speedy re-establishment of the Salmon in those lovely and limpid waters:

LAW FOR THE PRESERVATION OF SALMON.

PUBLISHED BY ORDER OF THE BOARD OF SUPERVISORS.

AN ACT for the preservation of Salmon in the Salmon River and Lake Ontario contiguous thereto:—Passed Dec. 12th, 1836.

The Board of Supervisors of the County of Oswego, convened at Pulaski, in the said county, do enact as follows:

§ 1. It shall not be lawful for any person to fish for, catch, or take, any Salmon, with any net, seine, weir, of any kind or description, in any of the waters of the Salmon River in said county, or in the waters of Lake Ontario, within one mile of the mouth of said river, between the first day of April and the twentieth day of October, in any year after the passage of this act. And any person offending herein, shall, for every such offence, forfeit and pay the sum of one hundred dollars, to be recovered by action, with the costs of suits, by and for the use of any person who will prosecute for the same before any justice of the peace in and for the said county of Oswego.

§ 2. And be it further enacted, That the Salmon so caught and taken in any of the waters aforesaid, in violation of the provisions of this act, together with any seine, net, weir, or traps so used or set for use, in violation of this act as aforesaid, shall be forfeited to and may be immediately taken into possession of, and carried away, by any person who shall find said net, seine, weir, or trap, while so used or set for use as aforesaid; and such person may and he is hereby authorised to keep, sell or otherwise dispose of the same for his own use and benefit, as to him may seem fit and proper. And any such weir or trap which shall be affixed to any dam or other obstructions in any of the waters of Salmon River, or which shall be set or secured to the bottom of said river or lake aforesaid, shall be, and the same is hereby adjudged a public nuisance, and may be abated by any person summarily without process of law, other than the provisions of this act.

§ 3. And be it further enacted, That the owner or owners of mill or other dams which are now erected across the said Salmon River, or any branch or channel thereof, so as to obstruct the usual course of the Salmon in going up said river, who shall not, on or before the first day of June, in the year one thousand eight hundred and fifty, have altered such dam by constructing an apron or slope on the lower side thereof, extending from the top of said dam to the bottom of the river below, said apron or slope to be not less than twenty feet wide, with a smooth and even surface, and sloping at an angle of forty-five degrees with the horizon, and to be located in or as near to the main channel of the river as circumstances will permit, so that Salmon may freely pass into the waters above such dam, shall respectively forfeit and pay to the town in which such dam is located, the sum of one hundred dollars, twenty-five dollars of which to be paid to the complainant, and the remaining sum of seventy-five dollars to be appropriated to the support of the poor of such

town, and to be received by the overseer or overseers of the poor thereof, in the manner provided for in the first section of this act. And in case such dam shall not have been so altered within the time above-mentioned, such dam shall be adjudged a public nuisance, and may be abated in the same manner as is provided in the second section of this act. And further, that any mill or other dam which shall be hereafter erected across said river, or any branch or channel thereof, shall be constructed with an apron or slope as aforesaid. And any owner or owners of such dam, which shall be hereafter constructed across said river as aforesaid, who shall neglect or refuse to comply with the provisions of this section, shall respectively forfeit the same penalty, to be prosecuted for, received and applied, as is herein before provided in this section.

§ 4. And be it further enacted, That it shall not be lawful for any person to fish for, catch, or take Salmon, while passing over such aprons or slopes, or within the distance of four rods of said slopes, aprons or dam; And any person offending herein, shall forfeit and pay the sum of twenty-five dollars, to be recovered and applied in the manner provided for in and by the first section of this act.

§ 5. And be it further enacted, That nothing contained in the first three sections of this act, shall be so construed as to prevent the fishing for, catching, or taking Salmon with a spear, in the waters aforesaid, by the owner or owners, lessee or lessees, and their lawfully authorized agents of the lands over which the waters of said river flow, or adjoining the waters of Lake Ontario aforesaid.

§ 6. And be it further enacted, That this act shall take effect on the first day of January, eighteen hundred and fifty.

A. L. Thomason, Chairman.

I earnestly recommend the passage of similar laws to this, by the Legislatures of the various Eastern States, especially by that of Maine, in reference to every river eastward, at least, of the mouth of the Kennebeck, as the only method by which the speedily approaching extinction of the Salmon can be prevented.

I have no doubt, however, that if the same law were passed by the Legislatures of Connecticut and New York, with regard to the fine river which gives name to that first State, and to the noble Hudson, coupled with an absolute prohibition to take or destroy the Salmon for the space of five years, that this, the king of fishes, might be re-introduced into those waters, by the adoption of the simple method described at page 60 *et sequentes* of this volume.

And I take this opportunity of stating, that I have good hope of making such arrangements as will enable me to procure, in this coming spring, such supplies of the Salmon fry, in the state which admits of

their transportation from Nova Scotia, as will suffice to establish the possibility of the undertaking. It is my intention, should I succeed in obtaining any support or encouragement from the Legislature of New Jersey, to make the experiment in the tributaries of the Passaic; and should it be successful, I can only add that it will give me but too much pleasure to assist any gentleman of spirit in procuring the means of restocking any waters on which they may reside, with this most game and noblest of fishes.

ABDOMINAL
MALACOPTERYGII. SALMONIDÆ.

THE BROOK TROUT.

THE COMMON TROUT.

Salmo Fontinalis; DeKay.

With regard to this very beautiful and excellent fish, I have very little to add to what is recorded in the former part of this volume, at page 86 *et seq.*

I have ascertained, however, as a fact, what I mentioned there as a mere surmise, that in some places and on some occasions the Brook Trout of America are taken of a very much larger size than is generally imagined.

At the Sault St. Marie, which I visited this autumn, although too late for Trout-fishing in its perfection, the average run of fish is exceedingly large; as also in the Garden River, which falls into the St. Mary's, a few miles below the beautiful rapid I have mentioned.

Three and four pounds is by no means an unusual weight; but the most important fact is this, that some years since, the commandant of the United States' Fort, at the Sault, offered a reward to any Indian who should bring in a Brook Trout of *ten pounds'* weight. The result was, that many were brought in of six and seven pounds and upward, and at last one monster which actually weighed eleven pounds and some ounces.

There is no question about this fact, or of its being actually a red-spotted Brook Trout, as distinguished from the Namaycush or Siskawitz; for the whole affair originated from a desire to investigate and ascertain the fact of natural history, on the part of the distinguished officer in question, and the fish was submitted to a thorough scrutiny and scientific examination before the premium was awarded.

The question may therefore be regarded as settled, that, in favorable situations and peculiar waters, the Brook Trout grows to a size much larger than is usually supposed to be its utmost limit, possibly even up

to fifteen or twenty pounds, though the average of the fish is undeniably below a pound.

There can, I am now satisfied, be no doubt that the very large *red-spotted* fish described by Dr. Smith, under the title of *Hucho*, as existing in many of the lakes of New England, is nothing more, as I surmised in the first instance, than an enormous and overgrown Brook Trout, very large specimens of which are constantly brought into the Boston markets from the interior of New Hampshire. The wonderful effect of different waters on the growth, coloring and flavor of fish has been already mentioned; and I shall have yet more to say on this subject when I come to speak of the Lake Trout.

I will only here farther observe, that on recent information from an undoubted authority, I have reason to believe that I have overestimated the average weight of the Brook Trout taken in Carman's Creek on Long Island; a very highly accomplished angler, who fishes those waters constantly, having assured me that the average is not *now* above three-fourths of a pound. There is no question, that in waters so assiduously whipped as those of Long Island, not only the number but the size of Trout must necessarily decrease. For farther instruction on Fly-fishing, &c., I must now refer my reader to the Second Part of this Supplement, where he will find, I trust, all that may be necessary to supply what was omitted above, both as regards doctrine and practice, art and implements, necessary for the gentle craft.

ABDOMINAL
MALACOPTERYGII. SALMONIDÆ.

THE GREATEST LAKE TROUT.

MACKINAW SALMON—NAMAYCUSH.

Salmo Amethystus; Mitchil, DeKay.—*Salmo Namaycush;* Pennant, Richardson.

Of this fish—concerning which, in the body of the work, I wrote chiefly on the report of others—in the course of a recent tour to the upper lakes, I had ample opportunities of judging. I saw certainly hundreds of specimens, none below seventeen or eighteen pounds weight, and many up to forty and forty-five. They are so abundant on Lake Huron that the Indians sell them willingly for a quarter of a dollar each, without reference to size.

The flesh of this fish, as an article of food, is exceedingly *bad;* it is coarse, flabby, and at once rank and vapid, when fresh, if such a combination can be imagined. On one occasion, a very large fish of this species having been served up boiled one day, and pronounced, by a large party of good epicurean judges, less than indifferent, a portion was dressed cold on the following day with salad, and was so insufferably rank, that it was incontinently sent from the table as uneatable.

When salted and smoked, or preserved in salt pickle, it is somewhat better, though not at all equal to its sister fish the Siskawitz.

I should be willing to assert that the average of this great fish is fully up to twenty pounds. I will here add, that I have reason to believe that the opinion hazarded on report of others, that the Great Mackinaw Trout is the *liveliest* of his species, is entirely erroneous; and that, from all the inquiries I made among Indians, hunters, and scientific anglers on the lake, I am inclined to disbelieve that this or the next described fish can be taken either with the fly or the spinning-minnow in trolling. If ever they are taken in either of these modes, or with the spoon or squid, it is contrary to their usual habit; and may be considered a freak of the fish, and one of so rare occurrence as to render

it a very unprofitable attempt for the angler to fish for them by any of these modes.

A coarse, heavy, stiff rod—a long and powerful oiled hempen or flaxen line—on a large winch, with a heavy sinker, a cod-hook baited with any kind of flesh, fish, or fowl—but, best of all, with a piece of the belly of its own species, is the most successful if not the most orthodox or scientific mode of capturing him.

Its great size and immense strength alone give him value as a fish of game; but when hooked, he pulls strongly and fights hard, though he is a boring deep fighter, and I think *never* leaps out of water, like the True Salmon or the Brook Trout.

THE SISKAWITZ.

NORTHERN LAKE TROUT.

Salmo Siskawitz; Agassiz.

This fish, like the former species, came frequently under my eye during my late northern tour; and I rejoice in the possession of a barrel of him in his pickled state, which I procured at the Sault St. Marie, on the strength of which I can recommend him to all lovers of good eating as the *very best salt fish* that exists in the world.

He is so fat and rich, that when eaten fresh he is insufferably rank and oily; but when salted and broiled, after being steeped for *forty-eight* hours in cold water, he is not surpassed or equalled by any fish with which I am acquainted.

Since my return, he has been tasted by very many gentlemen of my acquaintances, and by no one of them has he been pronounced anything less than superlative.

His habits closely resemble those of the Namaycush; and like him I cannot learn that he ever takes the fly, or is ever taken by trolling. I do not, however, believe that either of these methods are often resorted to for his capture, although there are many scientific fly-fishers about the Sault, and the Brook Trout of those waters are principally taken with large and gaudy lake-flies.

The average weight of the Siskawitz does not exceed four or five pounds, though he is taken up to seventeen. His excellence is so perfectly understood and acknowledged in the Lake Country, that he fetches double the price per barrel of his coarser big brother, the Namaycush; and he is so greedily sought for there, that it is difficult to procure him even at Detroit, and almost impossible at Buffalo.

I believe none were ever brought to New York, previously to the barrel which I brought down with me from the Sault. I am now able to supply, from personal inspection, what I was compelled unavoidably to

omit above, the number of rays in the various fins. They are as follows:

First dorsal twelve branched rays, second dorsal adipose, pectorals fifteen, ventrals ten, anal nine, and caudal twenty-one perfect, besides several rudimental branched rays; in all of which it differs from the Namaycush. It is, I think, on the whole, a bluer and less distinctly spotted fish than the Namaycush.

As a sporting fish, it is, I am of opinion, of small value; but as an article of cuisine—he is valuable, or rather, and that not hyperbolically, invaluable.

ABDOMINAL MALACOPTERYGII. SALMONIDÆ.

THE LAKE TROUT.

Salmo Confinis; DeKay.

Concerning no fish have I seen occasion so greatly to alter my expressed opinions—founded chiefly on the opinions of others, and, where original, formed from examination of fish taken in the waters of the Eastern States, and in Lakes George and Champlain, in none of which is it either a game fish, or in my opinion a good fish.

I still doubt greatly whether there be not two distinct species of Lake Trout, one quite peculiar to the small lakes of New York. Certainly I never saw or tasted any Lake Trout similar in appearance, or equal in flesh and flavor, to those which I ate at Geneva, and which were subsequently sent down to me in ice, by my friend Mr. Mandeville, of that city.

The description of these fish exactly tallies with the account of the red-fleshed Lake Trout of Hamilton county, where I have never fished, being deterred therefrom by dread of that curse of the summer angler, the black fly, which is to me especially venomous.

A letter which I insert below, from a capital angler, who has caught this fish in the far-famed Louis Lake, agrees exactly with the characteristics of the Seneca Lake Trout, but not with his habits; as I have the best authority for stating that in Seneca Lake they are never taken either by the fly or by trolling; although in Crooked Lake, immediately adjoining it, they are constantly caught by trolling for them "with shiners strung upon the hook, and drawn head foremost, with a hook leaded to sink twenty to thirty feet."

In Seneca Lake they are taken on set lines, varying in depth from twenty-five to four hundred feet, concerning which method more under the head of Lake Fishing.

The following is an accurate description of one of the fish sent to me from Seneca Lake. It differs, as will be seen, in many respects,

of structure, shape, and color, from the account quoted at page 117, from Dr. DeKay's Fauna of New York—almost widely enough, in my opinion, to justify its erection into a separate species:

Dental system.—A double row of strong hooked teeth on the labials and palatines of the upper jaw. The vomer perfectly smooth and toothless. In the lower jaw, a single row of strong hooked teeth on the labials, and a double row of smaller size on the tongue.

Branchiostegous rays, eleven on the right side, thirteen on the left.

Pectoral fin-rays sixteen, ventral ten, anal twelve, dorsal thirteen, caudal twenty-seven.

In all these respects it differs from DeKay's *Salmo Confinis*. Whole length, nineteen and a half inches. Head, four inches to the lower margin of the interopercnlum. Eye, one inch and a half from tip of snout. Origin of the ventral fin, nine inches and a quarter; of the anal, thirteen; of first dorsal, eight and a half; of the second dorsal, fourteen, from the tip of the snout.

Depth of the fish at the origin of first dorsal, three inches and three-fifths; breadth of back two inches.

Curvature of the belly greater than that of the dorsal outline. Color of the head dark bluish black. Irides silvery, gill-covers silvery with nacrous reflections. Back and sides, above the lateral line, beautiful glossy cærulean blue, mottled with bright silvery spots of the size of large duck-shot; below the lateral line the silvery spots are larger, and the ground lighter blue; belly pure silver.

Pectoral fins pale yellowish green, ventrals and anal greenish, very faintly tinged with red. First dorsal greenish transparent, veined with black; second dorsal silvery grey, slightly mottled; caudal greenish grey, mottled with black.

A very beautifully formed fish, more tapering than the Namaycush or Siskawitz, with the small head, and much both of the form and lustre of the True Sea Salmon.

Flesh rich orange buff, very firm, highly flavored and delicate. This fish, and another rather larger, but otherwise exactly agreeing with this, were eaten at my table by a party of six gentlemen, as good judges of good eating as any with whom I am acquainted, and were unanimously pronounced *better than Brook Trout! better than True Salmon! the best fish in the world!*

Singularly enough, at the very time that my opinion was becoming changed with regard to this—I now think *excellent* fish, I received a long and most kind letter from the accomplished fisherman to whom I had applied for information in regard to Hamilton county fishing, differing from the opinion given in the bulk of this volume, which I had just before discovered to be faulty.

I have no hesitation in laying this verbatim before my readers, as I have no doubt it is thoroughly correct in all respects, both as to the habits and quality of the Hamilton county Lake Trout, with which I am satisfied that the Lake Seneca variety is identical; the variation in the habits of the fish in the different localities being ascribable to the different qualities of the water which they inhabit.

The average weight of the Lake Trout in Seneca Lake is much as is stated by my kind correspondent—that is to say, under *four* pounds, and they very rarely exceed seven.

This letter was written at my request, for the purpose of pointing out, commenting upon, and correcting any errors of omission or commission which he had discovered in my work; and I can only express myself equally obliged by the candor and kindness of the criticism.

Had I permission to give the name of the writer, I am well aware that in every angler's opinion it would add immensely to the value of his remarks as authority; but it will suffice that I should assert that he is, of my own knowledge, one of the best fly-fishers in the United States.

ORIGINAL COMMUNICATION ON THE LAKE TROUT.

"The average weight is eight or ten pounds."

This is an extract from the New York Fauna of Dr. DeKay. Now, I venture to assert that Dr. DeKay never wet a line in the waters of Hamilton county, and that "the propensity to exaggeration in everything in relation to aquatic animals," induced his informant to make the above statement. I boldly assert that the average weight of Lake Trout is not four pounds.

An eight or ten pound fish is considered an unusually heavy fish. I will give you my experience. In May, 1848, I spent eleven days in Hamilton county, in company with a friend, and that friend an old Hamilton county troller. We faithfully fished in Lake Pleasant,

Round Lake, and the far-famed Louis Lake. We killed about two hundred pounds' weight of fish. I killed one of sixteen pounds, one of nine pounds and a quarter, and two of five pounds each. My friend did not kill a single fish heavier than three pounds and three quarters, neither did I, save those just mentioned; and I would and do say, that our fish did not average three pounds, the great majority being two pounders.

At the same time two friends fished Piseco Lake and Rackett Lake; the heaviest fish killed by them was eleven pounds; and I do not believe that they took another of greater weight than four pounds; at all events, we beat them all to smash in weight and number. So much for the average weight.

The wholesale assertion on your 118th page, that they *never* rise to the fly, should be qualified. It is not correct that they "*never* rise to the fly." They frequently do.

The nine pound and a quarter Lake Trout above referred to, was killed by me with an artificial fly. The facts are these:—On the 28th of May, 1848, I was fishing on Louis Lake. I was using a trolling-rod and a small Trout-rod, casting with one and trolling with the other. Upon my trolling-leader I had two flies; and when my oarsman was in the act of pulling round a projecting elbow of wood, I reeled up, to avoid contact with a fallen tree, and just as my first fly trailed on the surface of the water, the fish broke or rather dashed at it; I struck him instantly, and away he went, with so much velocity that I had hard work to keep my line from overrunning, not having a click-reel; I fortunately thumbed the reel, and passed my Trout-rod to the oarsman, and then had fair play; and I assure you I never had hold of a fish of the same size, that showed more game, power or endurance. He never sulked for an instant; and the only difference which I could discover in his mode of action from a Salmon, was that after being struck, he did not show himself, or leap. Had I hooked this fish with my light rod, I would not have killed him under an hour; and, indeed as it was, he was not "half gone" when Cowles, my guide, put the gaff into him. This fish rose in about eight feet water, and took me twenty-five minutes to kill him; and I never worked harder in my life to secure a fish, for you may imagine that I was anxious to secure a Lake Trout, hooked as I have described.

On the same page, you quote from Dr. DeKay, that this Trout has "the coarseness of the Halibut, without its flavor;" and subsequently assert, as your own opinion, "that this is the most worthless of all the non-migratory species." I think that you are mistaken—my reasons presently. On page 274 to 276, you also use the following expressions: "These great, bad and unsporting fish," &c., "with a bullet at the end of two hundred yards of line, run *rapidly* through the water." "He is very indifferent eating."

I disagree with you. "Every man to his taste." "What's one man's meat is another man's poison." I prefer a Lake Trout to the best Brook Trout—*don't laugh!* Now for my proof. To my knowledge, Lake Trout are preferred at John C. Holmes', the proprietor of Lake Pleasant House, to anything you can lay on the table. The nine pound and a quarter Trout to which I have before alluded, was eaten in this city, at the house of a mutual friend of ours, and was declared to be a glorious morsel. The sixteen pound and a half Trout was eaten at a friend's house in Broadway; seventeen persons, myself among them, partook of it, and I never heard anything surpass the praise of *all;* and for myself, let me say, that I never tasted a finer fish. He was boiled and eaten with plain drawn butter, or as housekeepers and cooks call it, I believe, "parsley and butter;" and during my sojourn in the woods, my friend and myself invariably preferred and had the small Lake Trout cooked by our guides. If it be "very indifferent eating," then I am easily pleased, and every person with whom I have spoken on the subject are no judges of fish flesh.

Have you fished for Lake Trout in Hamilton county? I presume not, for most assuredly you labor under a mistake as to the "*modus operandi.*"

Your instruction on lines, 9, 10, 11, page 274, is incorrect, and tends to lead the novice astray. Our friend of the "Spirit" is much nearer the mark, but the instruction is defective, as you have quoted it. I believe that no portion of your work was more anxiously looked for, than your views, direction and instruction upon fishing for Lake Trout. Hamilton county is becoming known; and as the majority of anglers never can and never will be "fly-fishers," trolling for Lake Trout is destined to be the prevailing mode of fishing in that county of great waters. Now, I propose to give you a description of the true,

and proper tackle for this branch of angling, which is, by all odds, second only to casting the fly; and a description of which has not, as far as I know, ever been published in any work on angling.

This excellent treatise will be found under the head of Lake Trout Fishing; and herewith, for the present, I quit the Lake Trout.

ABDOMINAL MALACOPTERYGII. SALMONIDÆ.

THE SALMON TROUT.

SEA TROUT—WHITE TROUT.

Salmo Trutta; Yarrel.

When speaking of this beautiful fish—which, by the aid of my friend Mr. Perley, of the city of St. John, I have been enabled fully to establish for the first time as an unquestionable inhabitant of our waters—I mentioned, on page 277, the singular fact that this fish, although it enters every river and estuary on the eastern side of Nova Scotia, and runs up so far as the meeting of the tidal and fresh waters, does not run up into the shoals, or spawn in the gravel beds of any of those rivers.

While commenting on that fact, I stated that it would appear to indicate a variation in this species from one of the normal habits of the race—that of running up into aërated waters, in order to spawn.

This, it now seems, was founded on an erroneous interpretation of the fact, which is, that the Salmon Trout, which does run up into fresh shallow streams, in order to spawn, on the Eastern Continent, does not breed with us at all on the Atlantic coasts of America, though it will probably be found to do so in the waters which fall into the Pacific, as the Columbia, Sacramento, and other rivers in which, as I learn from returned Californians, it literally swarms

The Salmon Trout in our north-eastern waters is merely a transient and very rapacious visitor, pursuing the vast shoals of smelts which run into all those rivers, and hunting them with unwearied activity and ferocity, until they escape above his reach into the swift and shallow fresh waters, into which he does not seem to pursue them After their escape, he returns at once into the outer bays and larger estuaries, where he is taken, as I have before described, with the scarlet ibis fly.

The pursuit of the smelt by this fish indicates the propriety of spin-

ning for him with that bait, in the proper localities, in case of his refusing the fly, especially when the smelts are becoming rare.

Mr. Perley, from whom I derive the above valuable information, assures me that he was very successful last spring in taking smelt with a very small scarlet ibis and gold tinsel fly. They rise constantly, he says, leaping quite out of the water at their favorite bait.

I propose to try this sport in the Passaic, in the coming spring; and in default of other fly-fishing, doubt not to find it good fun.

ABDOMINAL MALACOPTERYGII. SALMONIDÆ.

THE SALMON OF THE PACIFIC WATERS.

As these varieties are now falling within the notice of American citizens, and furnishing both food and sport to the bold and hardy pioneers of civilization who are resorting in such numbers to the El Dorado of the Far West, I quote from Richardson's Fauna Boreali Americana the following lively description of their structure, species and habits:

"In the paucity of our information respecting the fish of New Caledonia, the following notices, collected from the Journal of Mr. D. W. Harmon, a partner of the North-West Company, are valuable. This gentleman resided for several years at a fur-post on Stuart's Lake, which lies in the 55th parallel of latitude, and 125th degree of longitude, and which discharges its waters by a stream, named also Stuart, into Frazer's River, that falls into the Strait of Juan da Fuca. As his remarks upon fish relate chiefly to the Salmon tribe, this appears to be the most appropriate place for their insertion.

"'1811. *May* 11.—STUART'S LAKE. The ice in the lake broke up this afternoon. 22. We now take Trout in the lake, with set lines and hooks, in considerable numbers, but they are not of a good kind. It is perhaps a little remarkable, that Pike or Pickerel have never been found in any of the lakes and rivers on the west side of the Rocky Mountains.

"'*August* 2. It is impossible at this season to take fish out of this lake or river. Unless the Salmon from the sea soon make their appearance, our condition will be deplorable. 10. Sent all our people to a small lake about twelve miles off, out of which the natives take small fish, much resembling Salmon in shape and flavor, but not more than six inches long. They are said to be very palatable. 22. One of the natives has caught a Salmon, which is joyful intelligence to us all, for we hope and expect in a few days to have abundance. These

fish visit, to a greater or less extent, all the rivers in this region, and form the principal dependence of the inhabitants as the means of subsistence. The natives always make a feast to express their joy at the arrival of the Salmon. The person who sees the first one in the river exclaims, *Tâ-loe naslay ! tâ-loe naslay!* Salmon have arrived! Salmon have arrived! The exclamation is caught up with joy, and repeated with animation by every body in the village.

"'*September* 2. We have now the common Salmon in abundance. They weigh from five to seven pounds. There are also a few of a larger kind, which will weigh sixty or seventy pounds. Both of them are very good when just taken out of the water; but when dried, as they are by the Indians here by the heat of the sun, or in the smoke of a fire, they are not very palatable. When salted, they are excellent. As soon as the Salmon come into Stuart's Lake, they go in search of the rivers and brooks that fall into it, and these streams they ascend so far as there is water to enable them to swim; and when they can proceed no farther up, they remain there and die. None were ever seen to descend these streams. They are found dead in such numbers, in some places, as to infect the atmosphere with a terrible stench, for a considerable distance round. But even when they are in a putrid state, the natives frequently gather them up and eat them, apparently with the same relish as if they were fresh.

"'*October* 21. We have now in our store twenty-five thousand Salmon. Four in a day are allowed to each man. I have sent some of our people to take White Fish, Attihawmeg.

"'*November* 16. Our fishermen have returned to the fort, and inform me that they have taken seven thousand White Fish. They weigh from three to four pounds, and were taken in nine nets of sixty fathoms each. 17. The lake froze over in the night.

"'1812. *January* 30. I have returned from visiting five villages of the Nateotains, built on a lake of that name, which gives origin to a river that falls into Gardner's Inlet. They contain about two thousand inhabitants, who subsist principally on Salmon and other small fish, and are all well made and robust. The Salmon of Lake Nateotain have small scales, while those of Stuart's Lake have none.

"'*May* 23.—STUART'S LAKE. This morning the natives caught a Sturgeon that would weigh about two hundred and fifty pounds. We

frequently see much larger ones, which we cannot take for want of nets sufficiently strong to hold them.

"'*August* 15. Salmon begin to come up the river. Few Salmon came up Stuart's River this fall, but we procured a sufficient quantity at Frazer's Lake and Stillas. These lakes discharge their waters into Frazer's River, which is about fifty rods wide, and has a pretty strong current. The natives pass the greater part of the summer on a chain of small lakes, where they procure excellent White Fish, Trout, and Carp; but towards the latter part of August they return to the banks of the river, in order to take and dry Salmon for their subsistence during the succeeding winter.

"'1813. *August* 12. Salmon have arrived.

"'1814. *August* 5. Salmon begin to come up the river. They are generally taken in considerable numbers until the latter part of September. For a month they come up in multitudes, and we can take any number we please.

"'*September* 20. We have had but few Salmon this year. It is only every second season that they are numerous, the reason of which I am unable to assign.

"'1815. *August* 13.—FRAZER'S LAKE. Salmon begin to come up the river, which lights up joy in the countenances both of ourselves and of the natives, for we had all become nearly destitute of provisions.

"'1816. *September* 9. Salmon begin to come up this river.

"'1817. *August* 6.—STUART'S LAKE. Salmon arrived. In the month of June, we took out of this lake twenty-one Sturgeon, that were from eight to twelve feet in length. One of them measured twelve feet two inches from its extreme points, four feet eleven inches round the middle, and would weigh from five hundred and fifty to six hundred pounds.

"'The Carrier Indians reside a part of the year in villages, built at convenient places for taking and drying Salmon, as they come up the rivers. These fish they take in abundance with little labor; and they constitute their principal food during the whole year. They are not very unpalatable when eaten alone, and with vegetables they are very pleasant food. Towards the middle of April, and sometimes sooner, the natives leave their villages, to go and pass about two months at the small lakes, from which, at that season, they take White Fish,

Trout, Carp, &c., in considerable numbers. But when these begin to fail, they return to their villages and subsist on the small fish which they dried at the lakes, or on Salmon, should they have been so provident as to have kept any until that late season; or they eat herbs, the inner bark or sap of the cypress tree, *(pinus Banksiana,)* berries, &c. At this season, few fish of any kind are to be taken out of the lakes or rivers of New Caledonia. In this manner the natives barely subsist, until about the middle of August, when Salmon again begin to make their appearance in all the rivers of any considerable magnitude; and they have them at most of their villages in plenty until the latter end of September, or the beginning of October. For about a month they come up in crowds, and the noses of some of them are either worn or rotted off, and the eyes of others have perished in their heads; yet in this maimed condition they are surprisingly alert in coming up rapids. These maimed fishes are generally at the head of large bands, on account of which the natives call them *mee-oo-tees*, or chiefs. The Indians say that they have suffered these disasters by falling back among the stones, when coming up difficult places in the rapids which they pass. The Carriers take Salmon in the following manner. All the Indians of the village assist in making a dam across the river, in which they occasionally leave places to insert their baskets or nets of wicker-work. These baskets are generally from fifteen to eighteen feet in length, and from twelve to fifteen feet in circumference. The end at which the Salmon enter is made with twigs in the form of the entrance of a wire mouse-trap. When four or five hundred Salmon have entered this basket, they either take it to the shore to empty out the fish, or they take them out at a door in the top, and transport them to the shore in their large wooden canoes, which are convenient for this purpose. When the Salmon are thrown upon the beach, the women take out their entrails and hang them by the tails on poles in the open air. After they have remained in this situation a day or two, they take them down and cut them thinner, and then leave them to hang for about a month in the open air, when they will have become entirely dry. They are then put into store-houses, which are built on four posts, about ten feet from the ground, to prevent animals from destroying them; and, provided they are preserved dry, they will remain good for several years.'—*Harmon's Travels in North America*, 1820."

THE QUINNAT.

Salmo Quinnat; Cuvier.

"'THIS is the species which ascends the Columbia earliest in the season, commencing its run in the month of May in enormous shoals, clearing the greater Dalles, cascades and rapids innumerable, and making its way to the sources of the river, where, at the close of the season, it is found dead on the beach in great numbers. The muscular power of this fish is truly astonishing, even in a class of the animal kingdom remarkable for vigorous movements, for it may be seen ascending channels at the Kettle Falls so rapid, that when a stone as big as a man's head is dropped into them, it is shot downwards with the swiftness of an arrow.* Individuals of this species have often been seen with their noses fairly worn down to the bone, and in the last stage of emaciation, yet still striving, to the last gasp, to ascend the stream. The selection of particular streams for spawning is a remarkable feature in the history of the fish. It ascends the Walamet, Snake, and Kootanie rivers, &c., and passes by the Kawalitch, Okanagan, Dease's river, and others, seeming to prefer a rapid stream interrupted by falls, to one of a quieter character, though other circumstances must regulate its choice, as some of the rivers which it refuses to enter have an extremely rapid current. It is this Salmon which forms the main subsistence of the numerous hordes of Indians who live upon the banks of the Columbia, and it is known by the name of Quinnat, for one hundred and fifty miles from the mouth of the river. It attains a large size, weighing often from thirty to forty pounds.' The Quinnat is evidently the 'Common Salmon' of Lewis and Clarke. These travellers mention the first arrival of the Salmon at the Skilloot village,

* In the map published by the Society for the Diffusion of Useful Knowledge, the descent at the Kettle Falls is stated at twenty-one feet; but Lewis and Clarke were of opinion that in high floods the water below the falls rises nearly to a level with that above them.

below the site of Fort Vancouver, as having occurred on the 18th of April, in the year 1806.

"'COLOR.—General tint of the back bluish gray, changing, after a few hours removal from the water, into mountain green; sides ash grey with silvery lustre; belly white; back above the lateral line studded with irregular rhomboidal or star-like black spots, some of them occellated. Dorsal fin and gill-covers slightly reddish; tips of the anal and pectorals blackish gray; the dorsal and caudal thickly studded with round and rhomboidal spots, back of the head sparingly marked with the same. Whole body below the lateral line, with the under fins, destitute of spots. Lower jaw and tongue blackish gray; roof of the mouth tinged here and there with the same. Scales large. Teeth disappearing on the medial line of the upper jaw, one row on each palate bone, a few small teeth on the fore part of the vomer, and two rows on the tongue. FORM.—The greatest convexity of the back at the origin of the dorsal; end of the caudal semilunar; adipose opposite to the posterior end of the anal; dorsal of greater height than length. FINS.—Br. 17; P. 16; V. 10; A. 16; D. 14—0; C. $19\frac{4}{6}$.'

"The specimen of this Salmon, though it is very soft, and has lost its scales, still retains its form, so that I am able to add the following particulars to Dr. Gairdner's description:—General form much like that of a Salmon Trout. The head is exactly one-fourth of the length, from the tip of the snout to the end of the scales on the caudal. The snout is cartilaginous as in *S. Salar*, and the length of the lower jaw rather exceeds that of the upper surface of the head. The edge of the gill-plate is an arc of a circle as in that species, but the suboperculum is still more sloped off, having much the form of that of *Salmo Scouleri*. There are sixteen gill-rays on the right side, and seventeen on the left. The largest teeth are those of the under jaw, of which there are eleven in each limb, placed at regular distances, with some small ones in the intervals attached to the soft parts only. The labial and intermaxillary teeth are similar to these, and but little inferior in size. The lingual teeth, considerably smaller than those in the jaw, are placed in two parallel rows, five in each. The palatine teeth are a little shorter than the lingual ones, and those on the vomer are the smallest of all, scarcely protruding through the soft parts in the recent specimen; there are nine of them—two in front, the others

in a single series, running upwards of half an inch backwards, or about two-thirds as far back as the palatine teeth. The gullet is armed with small teeth above and below. The jaw teeth are as big as those of the Salmon Trout. There are sixty-six vertebræ in the spine. The pyloric *cæca* are very numerous, there being about one hundred and fifty-five of them; and their insertions surround the intestines from the pylorus until it makes a bend downwards, below which they continue to be inserted for a short way on one side of the gut only."

GAIRDNER'S SALMON.

THE QUEACHTS.

Salmo Gairdnerii; Richardson.

"THE specific name which I have given to this Salmon is intended as a tribute to the merits of a young though able naturalist, from whom science may expect many important acquisitions, and especially in the history of the Zoology of the north-west coast of America, should his engagements with the Hudson's Bay Company permit him to cultivate that hitherto neglected field of observation.

"'This species ascends the river in the month of June, in much smaller numbers than the Quinnat, in whose company it is taken. Its average weight is between six and seven pounds.

"'COLOR.—Back of head and body bluish gray; sides ash gray. Belly white. The only traces of variegated marking are a few faint spots at the root of the caudal. FORM.—Profile of dorsal line nearly straight, tail terminating in a highly semilunar outline. Ventrals correspond to commencement of dorsal and adipose to end of anal. TEETH.—Jaws fully armed with strong hooked teeth, except a small space in centre of upper jaw. Vomer armed with a double row for two-thirds of its anterior portion. Palate bones also armed with strong teeth. FINS.—Br. 11—12; P. 13; V. 11; A. 12.'

"In this species the gill-cover resembles that of *Salmo Salar* still more strongly than that of the Quinnat does, the shape of the sub-operculum in particular being precisely the same with that of *Salar*. The teeth stand in bony sockets like those of the Quinnat, but are scarcely so long. Those of the lower jaw and intermaxillaries are a little smaller than the lingual ones, and somewhat larger than the palatine or labial ones. The tongue contains six teeth on each side, the rows not parallel as in the Quinnat, but diverging a little posteriorly. The pharyngeals are armed with small sharp teeth. The numbers of

the teeth, excluding the small ones which fall off with the gums, are as follow:—Intermax. 4—4; labials 21—21; lower jaw 11—11; palate bones 12—12; vomer lost; tongue 6—6. When the soft parts are entirely removed, the projecting under edge of the articular piece of the lower jaw is acutely serrated, in which respect this species differs from all the others received from Dr. Gairdner. There are sixty-four vertebræ in the spine."

WEAK-TOOTHED SALMON.

QUANNICH.

Salmo Paucidens; Richardson.

"This Salmon ascends the Columbia at the same time with the *S. Gairdnerii*, and in equal numbers. It is taken in company with that species and the Quinnat, and has an average weight of three or four pounds.

"'Color.—Back of head and body bluish gray; sides ash gray with a reddish tinge; belly white. No trace of spots on the body or fins. Form.—Commissure of the mouth very oblique, approaching to vertical, dorsal profile quite straight, tail forked. Ventrals corresponding to middle of the dorsal, and adipose to posterior extremity of the anal. Teeth sparingly scattered and feeble on the jaws, only a few short weak ones on the anterior extremity of the vomer, and on the palate bones. Fins.—Br. 13; P. 17; V. 12; A. 17; D. 12—0.'

"From the labels having dropped off, I cannot refer the fragments of any of the specimens to this species with certainty; but I am inclined to think that the spine, containing sixty-six vertebræ, belongs to it, and if so, the gill-cover is extremely like that of *S. Scouleri*, and the bones of the head have the same fibrous structure which we have noticed in the description of that species. None of the teeth have been preserved, but those of the lower jaw appear to have been fixed in cartilaginous sockets, which have separated from the bone, leaving a rough surface. The palate and upper jaw bones are lost. The union of the branchial arches at the root of the tongue is longer and narrower than in the preceding two species, and the gill-openings consequently are more ample. Either this species or the *S. Scouleri*, or perhaps both, are named 'Red Char' by Lewis and Clarke."

THE EKEWAN.

Salmo Scouleri; Richardson.

"'The Ekewan, which averages thirty pounds in weight, ascends the Columbia towards the end of August and in the month of September. Its flesh is paler and of inferior quality to the four preceding kinds.' From Dr. Gairdner's description of this species, I have little doubt of its being the same with the *S. Scouleri* of Observatory Inlet; and I should, without hesitation, have referred to it the spinal column and opercular bones noticed at the close of the account of the preceding species, had not Dr. Gairdner mentioned that no specimen of the Ekewan was sent, as he had not obtained one small enough to be put in spirits.

"'Color.—Body above medial line smoke gray, passing on head and tail into bluish gray; a slight reddish tinge at the root of the dorsal, and between it and the adipose. Fins bluish gray, and all tinged with red except the caudal, which, with the back, is studded with irregular semilunar and stellated blackish brown spots. A large vermillion red patch in the concavity of the vertex, and another on the preopercule. Body below the mesial line grayish white with a reddish tinge. Form. —A remarkable flattening over extremity of snout, behind which a slight concavity to occiput, where the body rises suddenly into a hump, and continues rising as far as the first dorsal, this elevated portion being accuminated into a ridge. A notch behind the point of the snout gives an arched outline to the commissure of the mouth. Lower jaw also arched upwards, so that the two jaws do not approach each other when the mouth is closed, except at the two extremities. Teeth. —Jaws fully armed with strong hooked teeth, except a small space in the medial line of the upper jaw. Teeth moveable, from being imbedded in soft cartilaginous sockets. Two rows of strong lingual teeth, a single row on each palate bone, and a few rudimentary ones can be felt in a single row on the anterior extremity of the vomer. Teeth on

the pharyngeal bones. RAYS.—Br. 16; P. 16; V. 9; A. 16; D 12—0.

"'This description applies to a female—the male differs in the upper jaw being elongated into a proboscis, which projects beyond the lower jaw when the mouth is closed; it is formed of a moveable cartilaginous mass articulated to the extremity of the nasal bones, and is furnished with teeth as well as the rest of the jaw. The lower jaw is narrower, and entirely received within the concavity of the upper one when the mouth is shut.'"

THE TSUPPITCH.

Salmo Tsuppitch; ———.

"'THE Tsuppitch ascends the Columbia at the same time with the Ekewan. I counted 1644 ova in the ovary of a female.

"'COLOR.—Back of body and head studded with oval and circular spots; sides and fins, including the caudal, destitute of spots; back medially bluish gray, passing on the back of the head into blackish gray, and on the sides into yellowish gray, with a greenish tinge and silvery white. General color of the fins ash gray. TEETH.—Jaws fully armed with minute sharp teeth, a single row on each palate bone, a very few on the anterior end of the vomer in a single series, and a double row on the tongue. FORM.—Head small, exactly conical, terminating in a pointed snout. Commissure of mouth very slightly oblique. Convexity of dorsal profile rising gradually to origin of first dorsal, and declining from thence to the tail. Caudal forked. RAYS —Br. 13; P. 13; V. 10; A. 13; D. 12—0.'

"A spine containing sixty-four vertebræ, and an under jaw with ten curved teeth in each limb, are all the bones that I can with any appearance of correctness refer to this species. The teeth are of equal size with those of *S. Gairdneri*, or perhaps rather larger, and are attached to the jaw-bone through the medium of cartilage.

CLARKE'S SALMON.

Salmo Clarkii; Richardson.

"Dr. Gairdner does not mention the Indian name of this Trout, which was caught in the Katpootl, a small tributary of the Columbia, on its right bank. I have therefore named it as a tribute to the memory of Captain Clarke, who notices it in the narrative prepared by him of the proceedings of the Expedition to the Pacific, of which he and Captain Lewis had a joint command, as a dark variety of Salmon Trout. In color this species resembles the Mykiss of Kamtschatka, and there is no very material discrepancy in the number of rays in the fins. Vide Arct. Zool., Intr., p. cxxvi.

"'COLOR.—Back generally brownish purple red, passing on the sides into ash gray, and into reddish white on the belly. Large patches of dark purplish red on the back. Dorsals and base of the caudal ash gray, end of caudal pansy purple. Back, dorsal, and caudal studded with small semilunar spots. A large patch of arterial red on the opercule and margin of the preopercule. Pectorals, ventrals, and anal grayish white, tinged with rose red. TEETH.—Both jaws armed with strong hooked teeth, a single row on each palate bone, a double row on the anterior half of the vomer and on the tongue. Dorsal profile nearly straight. Ventrals opposite to the middle of the first dorsal. Fissure of mouth oblique. Extremity of caudal nearly even. FINS. Br. 11; P. 12; V. 8; A. 13; D. 11—0.'

"There appear to have been two specimens of this species sent to me by Dr. Gairdner. In both the spinal column contains sixty-two vertebræ. The teeth, which are closely set, rather long, slender and acute; and, in the older specimen, considerably curved, are in number as follows:—Intermax. lost; labials 28—30; palate bones 15—17; vomer 13, two in front and the others in a single flexuose series, as long as the dental surface of the palate-bones; lower jaw 13—13; tongue 6—6, in two almost parallel rows The lingual teeth are the

largest and most curved, those of the lower jaw are next in size, then follow the vomerine, palatine, and labial teeth, which are equal to each other. The pharyngeal teeth are also proportionally long, and there is an oblong palate, rough with very minute ones, on the isthmus which unites the lower ends of the branchial arches. This space is quite smooth in *S. Salar*, in several, if not in all the English Trouts, and in *S. Quinnat*, *Gairdneri*, and in the imperfect specimen which I have referred to *S. Scouleri*. In the latter the surface of the arches is also quite smooth, but in the Quinnat and Gairdneri minute rough points become visible with a good eye-glass. In all the Trouts the compressed rakers have their thin inner edges more or less strongly toothed. In one of the specimens of *S. Clarkii* the spinal column is nine inches long, in the other six."

THE NORTH-WEST CAPELIN.

Salmo (*Mallotus?*) *Pacificus;* Richardson.—Sub-genus *Mallotus;* Cuvier?

"'The Indian name of this fish is *Oulachan*. It comes annually in immense shoals into the Columbia, about the 23rd of February, but ascends no higher than the Katpootl, a tributary which joins it about sixty miles from its mouth. It keeps close to the bottom of the stream in the day, and is caught only in the night. The instrument used in its capture by the natives is a long stick armed with sharp points, which is plunged into the midst of the shoal, and several are generally transfixed by each stroke. It is the favorite food of the Sturgeon, which enters the river at the same time, and never has a better flavor than when it preys on this fish. The *Oulachan* spawns in the different small streams which fall into the lower part of the Columbia. It is much prized as an article of food by the natives, and arrives opportunely in the interval between the expenditure of their winter stock of dry Salmon and the first appearance of the Quinnat in May.' This fish is noticed by Lewis and Clarke in the following terms:—'The Anchovy, which the natives call *Olthen*, is so delicate a fish that it soon becomes tainted, unless pickled or smoked; the natives run a small stick through the gills, and hang it to dry in the smoke of their lodges, or kindle small fires under it; it needs no previous preparation of gutting, and will be cured in twenty-four hours; the natives do not appear to be very scrupulous about eating it when a little fœtid.'

"'Color generally silvery white, passing on the back into a blackish tinge. Large irregular, but generally oval spots of yellowish white and blackish gray on the back. A bluish black spot over each orbit. Margins of lips black. Back of head grayish white. Minute black dots on the silvery basis of the cheeks. Form.—Head small and pointed. Large suborbital covering the greater part of the cheek. Opercule terminating in a thin rounded angle. Mouth opening obliquely upwards, its fissure extending as far back as the anterior margin of the

orbit. Lower jaw projecting beyond the upper one, and terminating in a rounded knob turned slightly upwards. Margins of upper jaw entirely formed by the intermaxillaries, on which there are a few minute setæ in place of teeth. Lower jaw, vomer and palatines devoid of teeth. Tongue rough, and pharyngeals armed with teeth. Fins. —Br. 8; P. 11; V. 8; D. 11—0; A. 20. Adipose fin thin and containing little fat. Lateral line straight and continuous.'

"Five specimens were sent to me by Dr. Gairdner, but they were unfortunately all so much injured that I can add very few particulars to that gentleman's brief description. In the general form, the appearance of the scales, the black specks on the head and body, the form of the anal and its attachment to a compressed projecting edge of the tail, the structure of the lower jaw and gill-covers, and in the shape of the head as far as it could be ascertained, this fish closely resembles the Capelin. On the other hand, the ascent of the species into fresh water to spawn, and perhaps its dentition, ally it to the Smelt. Head as in the Capelin, forming one-fifth of the length between the tip of the snout and end of the central caudal rays. Caudal forked. Dorsal commencing a very little anterior to the middle between the tip of the snout and end of scales on the caudal, agreeing, in this respect, more nearly with the Smelt than with the Capelin, in which the dorsal is farther back, its first ray being equidistant from the end of the snout and the extremity of the central caudal ray. Anal of one specimen containing twenty-one rays. Gill-covers thin, papery, and flexible, lined with nacre. In drying, the surfaces of the opercular bones are marked with wrinkles parallel to their sides, as may be observed in the Smelt and Capelin, but not so conspicuously. These wrinkles are most evident on the square operculum. As the thin lining of the mouth and lips is mostly abraded, from the putrescency of the specimens, the dentition can be only imperfectly ascertained from them. In four specimens no teeth whatever can be discovered; but in a fifth, a female full of mature roe, the lower jaw is armed with a single series of very slender, curved teeth, rather more distant, and longer than those of the Capelin. There is also a solitary tooth remaining on the vomer of the same specimen, occupying the place of the exterior vomerine tooth in the Smelt, and nearly as large. Tongue conical as in the Smelt, and not presenting an oval flat surface sur-

rounded with teeth like the Capelin. In all the specimens the upper jaw was so much injured that its structure could not be ascertained; but it is probable that the intermaxillaries, being small as in the Capelin, were not distinguished from the labials by Dr. Gairdner, in his examination of the recent fish. The rakers of the branchiæ are long and slender as in the Smelts and Capelin. The stomach resembles that of the Capelin; the descending portion ends in a pointed sac, and a short branch which it gives off in the middle terminates in the pylorus. The intestine makes a bend, or rather twist, downwards at the pylorus, and runs straight to the anus, its calibre gradually becoming less as it approaches the latter. There are nine cæca, three of them rather shorter than the others, close to the pylorus; the other six, inserted in a single series down one side of the intestine, are each half an inch long. In three specimens there are sixty-eight vertebræ in the spine, and in two sixty-nine. A male specimen, with the melt half-grown, showed no traces of *villi*, or altered scales, on the lateral line, though the skin was apparently entire in that place. Male Capelins, destitute of the ridges of elongated scales, are occasionally taken in Greenland."

ABDOMINAL MALACOPTERYGII. SALMONIDÆ.

THE WHITE FISH.

[illegible] AWMEG.

Coregonus Albus.

It is very worthy of remark, that this delicious fish is taken abundantly, and of the very finest quality, infinitely superior to the fish of Lakes Erie and Ontario, and not inferior to that of Huron and Superior in the small inland lakes of Seneca and Cayuga.

So far as I can learn, the White Fish is nowhere taken with the fly, unless by pure accident; and that it is utterly unworthy of the angler's pursuit, as a fish of game, cannot be doubted. The *Coregoni*, in general, are the most vegetable-eating of all the *Salmonidæ*, and rarely take a bait of any kind, although I learn that in Seneca Lake they are occasionally caught on set lines, especially with stale bait.

I find it stated in Dr. Richardson's Fauna Boreali Americana, that the White Fish runs up the Severn River from Lake Huron, in order to spawn, on the authority of Dr. Todd; there must, however, be some error in this; as having visited the Severn this autumn, and canoed up it into Lake Simcoe, I can answer for the fact that it is impracticable to any fish; and that having a purely rocky bottom until above the great falls, it possesses no spawning grounds to tempt fish. At the very outlet there is a natural fall or rapid of above twelve feet, with an old Indian mill-dam; at about twelve miles higher yet, there is a very powerful rapid of about fifteen, and at twenty-five from the mouth a superb rapid and fall of seventy feet descent in about a hundred yards of length.

The Severn notoriously contains no fish except a few sucking Carp of different kinds, a few Rock Bass, and in the shallow rice lakes above the falls, goodly Mascalonge.

The best White Fish are taken in the rapids of the Sault St. Marie, with scoop-nets; but they are also speared by the Indians, and taken in vast quantities with the seine, by the white settlers.

LE SUEUR'S HERRING SALMON.

Coregonus Artedi; Le Sueur.

This fish is the Herring of Lake Erie and the Niagara River. It is not of much value as an article of food, and of next to none as a fish of sport. The meat is white and delicate enough, but rather dry and tasteless.

Richardson thus alludes to it in his fine work, so often quo. on the Northern fishes of America:

"This species having been taken in Lake Erie and the Niagara River, requires to be noticed in this work. M. Le Sueur says that it is locally known by the name of Herring Salmon, and is considered to be very delicate food. As it did not fall under our notice, we shall transcribe the description given of it by its discoverer.

"*Description quoted from M. Le Sueur.*—Body subfusiform, a little elevated at the back; head small, having an osseous radiated plate which is covered by the skin; snout pointed. In form this species approaches the *Scombri;* a section of it is oval. Head small and narrow; snout short, terminated by small intermaxillaries; maxillaries wide, sharp-edged as in the Herring, edges entire; mandibles carinate, producing inwardly a triangular pedunculate expansion; very small conical teeth inserted in the skin of the lips at the extremity of the jaws: these teeth were sufficiently manifest in a small individual, but not visible in a larger one, a female, which came under my observation. Rays in the osseous plate of the head tubular, and open at the exterior, some tending backwards, and others towards the end of the snout. A faint carinate line divides the top of the head in the dried specimen. Lateral line straight and near the middle; nostrils double, close to the end of the snout and articulation of the maxillaries; scales round, approximated, easily falling off; the base of the tail is covered with them. Color ash blue at the back, paler and silvery on the rest of the body, with yellow tints on the tail, head and dorsal; iris whitish,

pupil black. Length ten to twelve inches. FINS.—Br. 9; P. 16; D. 12—0; V. 12; A. 13; C.—$\frac{6}{6}$.

"M. Le Sueur, in comparing our Attihawmeg, or his *Coregonus Albus*, with *C. Artedi*, says that it has a less fusiform body, and the back elevated from the nape to the dorsal. 'The *C. Albus*,' he further states, 'has more depth of body, a greater elevation of back, and much stronger proportions in its body, fins, and scales. The adipose fin, which is broad, appears to consist of delicate rays, much pressed, and in pairs.' A careful examination of the dried specimens of our *C. Albus* from Lake Huron, exhibited no rays whatever, nor any interspinous bones to support them, but the fin, in drying, splits in a fibrous manner."

This is the Herring of Seneca Lake, now becoming very rare, but much prized, as the best and most killing of all baits upon the deep lake set-line for Trout, Pike-Perch, Eels, and Black Bass.

LAKE HURON HERRING SALMON.

THE HERRING.

Coregonus Harengus; Richardson.

This fish is exceedingly abundant on the shores of Lake Huron, to which it resorts in enormous shoals in the spring and autumn, and constitutes a principal article of food to the Indians and white settlers. It is rather a dry and tasteless fish. It occasionally rises at the fly, but is rarely taken except by the seine.

Richardson describes him thus. I have examined this and the last species, and am satisfied that they are distinct:

"This fish is plentiful at Penetanguishene, on Lake Huron; but I am unable to determine whether it be the same with the *C. Artedi* of Le Sueur, which we have already noticed as an inhabitant of Lake Erie. Baron Cuvier's remark upon our specimen was, '*Espèce nouvelle voisine des Coregones.*' It resembles *C. Lucidus* very nearly; its larger head, smaller scales, and a slight difference in the position of its ventrals being the principal distinctive characters I have been able to detect in the dried specimens. Having lost my notes of the dissections which I made of *C. Lucidus*, and having examined the recent specimens of *C. Harengus* only cursorily, I can say nothing respecting any differences that may exist in their viscera. An argument against the identity of the species may be adduced from their habitats being upwards of twenty degrees of latitude apart.

"The Lake Huron Herring, Salmon is gregarious, like the Bear Lake one, and frequents sandy bays during the summer months. It spawns in April and May, and at that time is occasionally seen in rivers. According to Mr. Todd's observations, it is 'a timid fish, appears to be in constant rapid motion, and associates in shoals in pursuit of the fry of the small fishes on which it feeds. As an article of diet, it is well tasted and wholesome, though much less rich and agreeable than the Attihawmeg.

"The following is a description drawn up from notes made at Penetanguishene, aided by a re-examination of the dried specimens:

"COLOR, in the recent fish, olive green on the back, silvery on the sides and belly, and blackish green on the top of the head; the gill-covers, cheeks, and irides are whitish and nacry.

"SCALES of the same form with those *C. Lucidus*, but only of two-thirds the size; on the sides their transverse diameter is four lines, their longitudinal one rather more than three, and when *in situ*, eight are included within a linear inch. There are eighty-four on the lateral line,* and twenty-two in a vertical row under the dorsal, of which nine are above the lateral line, and eight between it and the ventrals. The lateral line is straight.

"FORM.—Body compressed, back rounded, belly slightly flattened, the greatest thickness, however, being at the lateral line, which is rather nearer to the back than to the belly; the height of the body, at the dorsal, is double its thickness. Profile like that of *C. Lucidus*, the head being, however, more acute.† The snout is obtuse, when seen in front or from above, and the vertex is smooth and rounded in the recent fish; in the dried specimen the radiated tubular lines near the nape, the sagittal ridge and other eminences, appear as in *C. Lucidus*, but not so prominently. The length of the head is more than one-fourth of the distance between the tip of the snout and end of the scales on the caudal, and somewhat less than one-fifth of the total length, including the lobes of the caudal. In the position of the eye, and the forms of the jaws and opercular bones, this species scarcely differs from *C. Lucidus*. When the mouth is fully open, its orifice measures seven lines vertically, and five and a half transversely; the under jaw, which is narrow, but not acute, then projects about four lines beyond the articulations of the labials.

"TEETH, none on the jaws, vomer, or palate, but three rows of very slender ones on the tongue may be perceived by the aid of a lens. Rakers stiff, subulate, and rough on the margins, the middle ones of the first arch, which are the largest, measuring five lines.

* One specimen had only seventy-seven scales on the lateral line, but the same as the above in a vertical row.

† The figure, which was taken from a dried specimen, presents a less elegant profile than that of the recent fish.

"Fins.—Br. 9—9; D. 12 or 13—0; P. 16; V. 12; A. 13; C. 19$\frac{1}{1}$.

"The ventrals originate under the sixth or seventh dorsal ray, but the structure and form of all the fins are nearly as in *C. Lucidus*. The adipose is not supported by interspinous bones, but it exhibits in the dried specimen a very fine, apparently fibrous structure, which entirely disappears when the fin is moistened. In one specimen the centre between the tip of the snout and end of scales on the caudal, corresponds with the first ray of the ventrals and thirtieth scale of the lateral line; in another it is a little posterior to the first ventral ray, being at the thirty-third scale of the lateral line: in the last specimen the lateral line has seven scales more than the other."

THE PIKE PEARCH.

YELLOW PIKE PERCH, OR AMERICAN SANDRE.

Lucioperca Americana; DeKay.

In speaking of this fish in the body of this work, not having then seen it, I borrowed both the description and the cut from Dr. DeKay's Fauna of New York.

The cut, I regret to say, is very incorrect, especially as regards the position of the ventral fins, which, as in the *subbrachial Malacopterygii* and the Bass group of the *Percidæ*, are attached to the humeral bones, and situate immediately below the pectorals.

The following is the description, with measurement, of very fine specimens, sent to me by Mr. Mandeville, of Geneva:

Head prolonged, snout-like, with a flattened depression above the eyes. Preoperculum nearly vertical, scalloped rather than dentated on the under margin. The operculum has three flat angular processes, corresponding to a line drawn from the snout through the centre of the orbit, and a pointed membrane beyond.

Eye very large, nearly equidistant between the snout and the opercle.

Dental system most formidable; several powerful recurved canine tusks at the extremity of each jaw, those of the lower received into corresponding cavities of the upper jaw; a series of smaller hooked teeth on the labials, and a row of very long sharp recurved tusks on the palatines; no teeth on the tongue or vomer.

Whole length, 19 inches; from snout to posterior angle of opercle, 5 inches; from snout to centre of eye, $1\frac{7}{8}$ inch; to origin of the pectorals, $4\frac{1}{8}$ inches; of ventrals, $5\frac{3}{4}$; of anal, $11\frac{1}{2}$; of caudal, $16\frac{1}{2}$; of first dorsal, 5; of second dorsal, $10\frac{1}{2}$. Breadth, $5\frac{1}{2}$ inches; thickness, $2\frac{1}{2}$.

Branchiostegous rays, 6.

Pectorals thirteen soft rays; ventrals one spine five branched rays; anal one spine twelve branched rays: caudal deeply furcate, nineteen

rays; first dorsal, fifteen spines, first three short, fourth and fifth longest; second dorsal, two short spines, seventeen soft rays. The ventrals are placed, as in the *subbrachial Malacopterygii*, immediately below, and a little behind the pectorals.

The dorsal outline is slightly curved, and descending abruptly to the snout, above the operculum; the lateral line is nearly concurrent with the dorsal outline; ventral outline much curved.

The pectoral fins are golden yellow; the ventrals and anal, ruddy orange; dorsals, transparent yellowish green, mottled with blackish gray. Head, blackish brown above. Gill-covers, golden yellow, mottled with purplish gray. Back, above the lateral line, purplish brown, with a golden spot on the edge of every scale, giving it a beautiful dappled hue. The sides down to the pectorals, and in a line thence to the anal, beautifully mottled with vivid golden yellow and purplish brown, running in irregular wavy diagonal lines, upward and backward. Belly pure white.

This is a beautiful fish, and as good and game as he is beautiful.

In Seneca Lake these fish will rarely take the bait in trolling or spinning; but in Cayuga they are constantly so taken with Shiners, or by trolling with two hooks about two and a half inches apart, baited with a frog, one hook through the lip, the other through the thigh, which, as the frog is drawn along, gives it a natural swimming motion.

The Pike Perch fights hard and pulls very strongly. The same tackle as for Pickerel is the best.

His flesh is delicate and delicious; boiled, he is best with parsley and butter or egg sauce; but in no way is he other than a good table

SOUTHERN SEA FISHES.

It is a source of much regret and disappointment to me that a number of specimens, which I was promised from Charleston, have not come to hand in season for this edition; I relied on them wherefrom to draw figures and compile descriptions of several, to me, new *genera*, which I can now only name by their provincial appellations, which, being incorrect and local, are not to be found in the books.

The principal of these are the Cavalle, and Horse Cavalle, two fish of the *Percoid* family, strongly spined, which are said to be bold biters, and the former a very fine fish. Besides these, there is the Southern Black Fish, entirely different from the Tautog, or Northern Black Fish, and having a much larger mouth; several varieties of Mullet, and the far-famed Pompano of Florida, a fish of the Mackarel family.

Of late years, the Tautog and Boston Bay Whiting have been introduced into the Bay of Charleston, and are said to be greatly thriving and becoming abundant.

None of these fish, as I am informed by my friend Mr. King, of Charleston, South Carolina, the keenest fisherman of those waters, are ever taken except with the hand-line, with a heavy sinker and clam bait, the rod and reel being ignored and voted useless by the anglers in the deep-sea line.

I trust, at some future period, to procure more and authentic information touching these fishes; but in lack of certain and positive information, I prefer silence to either theory or error.

PART II.

THE

FISHING

OF

North America.

SALMON FISHING.

On reconsidering what I have written in the body of the work, I perceive that I have written somewhat too rapidly, taking matters for granted which are granted with a finished angler, and therefore passing them over without comment, where, perhaps, they need to a novice farther explanation.

I shall therefore recapitulate, first, the implements, and then the *modus operandi*.

THE SALMON-ROD AND TACKLE.

My description of the Salmon-rod, on page 240, is nearly unobjectionable, so far as it goes. Experience makes the angler dread whalebone; I think that it should never be used in any rod, particularly on the tip of the top joint of a Salmon-rod; it will curve, and by pressure cease to be elastic, or spring. I have seen the worst effects from its use. The stationary curve or bend of the extreme end of the tip will, despite of every precaution, cause the line to coil round the top, and then, "where are you?" reel useless—tackle gone—fish gone! Anything but whalebone. Split bamboo, spliced, is preferable to any other wood. Lance-wood is good—very good. All modern Salmon-rods are made with ferrules and cappings, each of which is received into a socket of metal, brass, or German silver, let into the receiving-joint. This is all very neat and convenient; but I never would think of throwing a fly for a Salmon, with a rod of this character, without loop-ties, as security against the joints loosening or flying apart.

The continued use and action of a powerful eighteen-feet rod, when subjected to the constant tug and work of a Salmon, will loosen them, I care not how well made, or how closely fitted; and even with the loop-ties, I have known the very best to shake, and make one also shake

Screwed joints are, I think, not lasting; they very soon get worn and shaky, and make a man timid; for in Salmon fishing, one should have the most unbounded confidence in his tackle. I cannot overcome my respect and reverence for the old-fashioned spliced rod; with it one has elasticity, firmness, and strength, combined with lightness. A modern eighteen-feet rod must weigh at least two pounds twelve ounces. The spliced rod, same length, will not weigh more than two pounds two ounces; and ten ounces additional weight is no joke in a day's cast.

Every Salmon-rod should be provided with a spike to screw into the butt; it is all-important for many purposes, and every Salmon-fisher knows the use of it. The great fault in most Salmon rods is the imperfect and ignorant "ringing." The modern rods have too few and too small rings; too many are better than too few, particularly on the top joint. The very best rods now have sixteen rings.

One hundred yards of line is abundant for the heaviest Salmon; and I believe that no Salmon was ever lost owing to shortness of line, with one of this length on the reel. Every experienced angler for Salmon knows that a Salmon is, unlike the Bass, not a "run-away" fish. His run seldom exceeds fifteen or twenty yards, and even then, like a trotting horse, he requires a tight rein to make him "go." In Salmon-fishing it answers very well where you have eighty or a hundred yards of line on the reel, to have the taper gradual from the fortieth or fiftieth yard, the centre of the line, to the reel end, and from the centre to the fly end; and thus, when necessity requires it, the reel end can be changed to the fly end, and the *old* fly end made the reel end. I have killed my share of Salmon, and I never had a fish take seventy-five yards from me, even in a large lake, where they had plenty of "sea-room."

A friend of mine struck a very heavy fish on Loch Corrib, in the County Galway, in Ireland. The water was very rough, and he was standing on a projecting rock which ran out of a small island, opposite to the beautiful village of Ouchterard. He had light tackle, and not more than seventy yards of line on his reel. He killed the fish after about one hour's work; and that fish did not run off fifty yards of his line. His weight was eleven pounds, much lighter than the angler expected when he first struck him.

The use of two or more flies, when fishing for Salmon in a river, would be an experiment, I think, dangerous in the extreme; and even in lakes I have never seen any man use even two flies, when fishing with the rod.

A true Salmon fisher should disdain and spurn the use of double gut. A friend, instructed by the best fisherman during his day, states that he never shall forget his direction, viz:—"Let your tackle be of the lightest kind, consistent with strength." *He* never used double gut. I never have, and never will. The link on which the fly is tied should be finer and more slender than the link to which it is looped or knotted. The end of the casting-line, which is united to the reel-line, should be the thickest and strongest portion of the gut, and the whole should taper to the fly. Three yards and a half is the proper length from fly to reel-line. This instruction is all-important, as I hope to show, when speaking of Trout.

THE CASTING-LINE.

THE casting-line should be looped, for Salmon fishing, to the reel-line. The loops on both should be securely whipped with strong and well-waxed silk. The casting-line, without the addition of the fly-links, should be three yards, and no more; and every knot on the casting-line should be the *water-knot*, which is the simplest knot in the world, being the common tie-knot, with two or three turns round itself instead of one. For Salmon fishing three knots are necessary, though two are sufficient for Trout.

Each knot should be well secured by whipping with waxed silk; and at the end of the line a link should be made, and well secured as above.

The link upon which the fly is tied, should be knotted with the water-knot, as described, to another link, upon which a loop should be made, also well secured by whipping.

Thus, then, we have two links upon which the fly is tied. The loop then upon the fly-link is looped to the casting-line, and thus the casting-line is about three yards and a half in length from reel-line to fly. By this mode, the disadvantage arising from the double loop on the casting-line is partly obviated by having the loop removed a considerable distance from the fly.

This is my Salmon casting-line, and experience and close observation enables me to say, with confidence, that it is the proper one.

On page 244, I have stated that "the mode is identical," that is, of casting the fly for the Trout and the Salmon. What I intended here to say is simply, that the effect to be aimed at is the same; the mode of operation is certainly in some sort different. The wielding of an eighteen-feet Salmon-rod, as done with both hands, certainly differs from the handling with one hand of the light twelve-feet rod.

The former requires more power, slowness and steadiness of arm; and far more caution is needed to prevent the fly from cracking off.

It is the most difficult thing in the world to describe motions of the arm, so as to be distinctly understood; much more, motions of an implement so delicate as a fly-rod.

With regard to the mode of casting or delivering the fly, I have nothing to add to the instructions given on page 246 of the body of the work. I will, however, add, that in playing a heavy fish, hooked on a single gut, it is very well, "beside advancing the butt, and bearing your rod backward over your right shoulder," to lower the body by bending the knees as much as possible, or even kneeling down, as by so doing you diminish and equalise the strain on that most delicate of instruments, the long Salmon-rod.

It is to be observed that a moment longer may be given to a Salmon, before striking, than to a Trout; many good writers recommend allowing him to turn before striking, but with this I do not coincide.

My own idea is like shooting on the first aim—always to strike, and to kill, with judgment, as quickly as you can; never giving a moment of time, or an inch of line, which you can avoid giving.

On the subject of flies, it is not necessary to say more. All large and gaudy flies, on Limerick hooks, will kill in some state or other of some waters; and with a pretty good assortment, the angler has only got to change till he finds one to which the fish will rise, and then stick to that.

And so, adieu to Salmon Fishing.

TROUT-FISHING.

THE IMPLEMENTS.

With regard to the rod, as described on page 254, I have little or no more to say.

Different persons approve of different degrees of pliancy in rods, Irish anglers generally using one much more pliant than their English brethren.

My correspondent referred to above, writes to me in reference to my description, thus: and his theory and practice are both so good, that I cannot do better than again quote him, as I agree fully with every word.

THE TROUT-ROD.

"A pliant Trout-rod, in the hand of a fly-fisher, is a comfort. Persons who use spliced rods can handle a very pliant one, but the great majority of anglers, as you are aware, use the jointed rods; and it is almost impossible for 'an old hand,' who has for years used a spliced rod, to procure one sufficiently pliant.

A rod can, however, be too pliant, even in the hand of the most experienced. Every man who has used a very pliant rod, knows that when preparing for a fresh cast, the line will catch before it can be carried sufficiently back to make the forward movement; and the effect is, that in the effort to obviate the threatened difficulty, a fly will crack off. Now, I use a very pliant rod; but I am an Irishman, and learned my trade in that land of lake and river. You are an Englishman, and I suppose became master of your trade there. The English use comparatively stiff rods. A rod should not be pliant below the second joint. It is no easy matter to describe one. Your length, twelve

feet, is exactly up to my notion The weight should not exceed thirteen or fourteen ounces; and above all, it should not be top-heavy. In stormy weather, a very pliant rod, even in the hands of the best angler, is very inconvenient and laborious; and when used in such weather, nothing short of constant care and exertion will save the flies from snapping off.

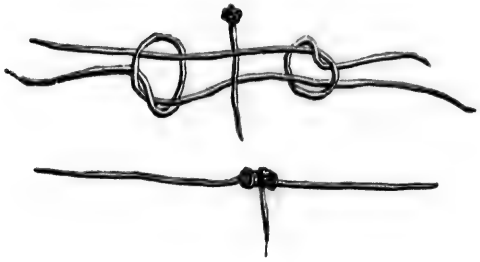
"You omit to mention the necessity for a spike in the butt. Every fly-rod should have it. In case a new cast of flies is required, or any change, what a convenience to have the rod erect, and the line hanging down to your hand. How many rods get broken when stretched on the ground, by some careless devil standing on the tip; or the tip being obstructed by weed or brier, in a sudden and careless lift.

"You give no directions about the number of rings. A rod should have sixteen. Avoid whalebone tip. There should be no perceptible spring in a fly-rod before three and a half feet from the spike; a spring below that will inevitably make the rod top-heavy. Three yards is the length of the casting-line, but never more than three and a half.

"You say 'the flies should be three in number.' Not always—there are exceptions, many exceptions. In confined streams, where there are bushes, weeds, &c., one fly is as much as can be managed or used. Also, in streams where the fish are very numerous, one fly is plenty, particularly with the light tackle, which a gentleman and an angler should use. In clear water, lakes and ponds, three flies are the proper number.

"Now to return to the casting-line. On a casting-line no loops of any kind should be used, because they are unnecessary; and every unnecessary bulk, or uneven surface, which may make a splash, or frighten fish, should be avoided. To the reel-line, splice a link of the strongest gut; that is, proportionate with the tapering gut of the casting-line, which is a fixture, until used up by constant cutting, when another is put on.

"Let the casting-line be nine feet, the largest and stoutest links at the top, graduating to the bottom. To the bottom or last link, *knot* the link upon which the tail or stretcher-fly is tied. Three feet from the end of the casting-line, before the tail-fly is put up, or three feet eight or nine inches from the tail-fly, use this knot:



Two feet from the first knot, have a similar knot. The ends of all the other knots, except the one which secures the tail-fly, tie neatly with waxed silk, as near the color of the casting-line as you can. The knot should be the 'water-knot.' Let the first dropper or drop-fly be tied on gut three and a half or four inches long, the second a shade longer. Upon the end of each link upon which the drop-fly is tied, let the knot be that in the cut. The slip-knot on the casting-line, as depicted in the plate, can be pulled open by catching the little projections on each side, and pulling them apart. I insert the knot end of the drop-fly between the opening or two links, and then pull the knot together, and the dropper hangs perpendicular. There is no more secure or neater knot; every cast tends to increase its security; and there is no contrivance whereby the drop-flies can work, or hang so well. The reason why we whip or tie the ends of all the knots save those for the droppers and tail-fly, is, that when fishing in stream or pond, if the projections of the knots are exposed, the casting-line will constantly become foul and heavy, by every floating piece of grass or stuff, which will adhere to the sharp projections of the knots.

"Objections may be made to knotting the tail-fly to the casting-line, and thus making it a fixture. The answer to this is, that the advantage is far greater than the disadvantage. One can in a moment slip out either or both his droppers, by drawing apart the knot, and insert other flies; or he can, as every man should, when fishing, have a perfect mounted casting-line 'all round his hat;' and it is only the work of a moment to cut the discarded casting-line from the stationary link attached to the reel-line, and tie on the substitute. Or one may

cut the casting-line in use close up to the knot which secures the tail-fly, and tie on another—the loss of gut is trifling—and when, by constant cutting, the link becomes short, he ties on a new one.

"There is one other remark worth mentioning. The tail-fly should be the heaviest, the first dropper should be less in size, and the hand-fly, or second dropper, less than the first; and let the angler be assured, that attention to these apparently minor matters tend to fill his creel and save his fly. This is the true idea of a casting-line. A man should be particular in his tackle, and he is as much entitled to credit for its neatness as for dexterity in its use.

ON THE USE OF THE ROD.

"Every angler should learn to use the rod with either hand; and no man is a finished, safe, expert, or self-saving angler who cannot use the left as well as the right hand. To say nothing about a sprained wrist, and consequent loss of sport during the season, or being obliged to cease fishing from the fatigue and weakness of one hand, there are certain winds, in some situations, when and where a cast cannot be made with the right hand.

"Again, it is important to be able to throw a fly in the teeth of the wind, which, when done properly, often lifts the very best fish. It is not difficult, but it is a little laborious, and needs practice. It is not accomplished either by the double or single turn; it is done by bringing the rod right up in front, avoiding, if possible, the wind taking the rod to the right or left. Now when the rod is almost straight, press the butt strong towards the body with the wrist, keeping the arm as close to the side as possible, until the tip comes about three-quarters straight against, or in the eye of the wind; and then run the arm out directly forward, turning the wrist, during the forward action, outside, or towards the right side. By this mode, which is more easily done than described, the line, which should be only of manageable length, will unfold, and display a pretty fair cast; at all events, the waves, or turbulent state of the water, will conceal the defective fall of the flies

"Every angler should tie his own casting-line; no dependance can be placed on those purchased, for the reason that very few tackle-sel-

lers are practical fly-fishers, and do not know the necessity, and will not take the pains, of making a tapering line.

"A casting-line will cost seventy-five cents at the tackle store; made at home, they cost about eighteen cents. It is important then, on the score of economy, as well as success, that the angler should make his own casting-line.

"It is therefore important that the proper knots should be known by name, and how to make them.

"There are but three knots suitable for angling, to wit: the slip-knot, described in the cut above, which is only fit for the insertion of the drop-flies; the water-knot, and the knot, or mode of finishing a knot, which might be termed the 'finishing-knot.'

"The slip-knot need not be described—it is plain enough in the drawing.

"The water-knot is the most simple of all knots. It is the '*common knot*,' passing or turning the ends to be united twice round each other, and then pulling them together. It is only necessary to pass them twice round; it is enough, although some persons use three turns. It is the smallest knot by which gut can be united. When the knot is pulled tight, then cut off the ends, leaving a little remaining for the whipping or fastening. The projecting ends should then be fastened with thin but strong silk, waxed with white wax. Every practical angler knows how to finish off, or secure the end of the silk. The silk is wound round the projecting and main gut, until within six or seven turns or rounds of the end of the projecting bit of gut; then turn the point of the silk towards the knot, and continue the winding around the end of the silk which has been turned towards the knot, until the winding is finished, then pull the end tight under the whipping, and the fastening is secure and invisible."

OF TROLLING FOR LAKE-TROUT

IN HAMILTON COUNTY, NEW-YORK

(BY A SPECIAL CORRESPONDENT.)

I PROPOSE, in this connexion, to treat of this fine and exciting sport, describing 1st, The rod;
2nd, The reel;
3rd, The line,
4th, The leader, and train of hooks;
5th, The bait and flies;
6th, The bait-kettle;
7th, The boat and oarsman, or guide;
8th, The manner of striking the fish, when the bait is taken.
And lastly, 9th. How to play, and gaff the fish.

1st. THE ROD.—A mutual friend of ours, who writes occasionally for the "*Spirit*," and who is a most skilful troller, wrote an article which appeared in the "*Spirit*" in the fall of 1848, signed "M., Maspeth, Long Island," in which he gave a capital description on most of the above heads. I wish you had the paper, as it is all that is to be said on the subject.

The trolling-rod spoken of by you on page 327, would answer, to wit: the barbed rod. * * * had two of the most perfect trolling rods I have seen; they were made by Ben. Welch, of Cherry-street, and are all bamboo cane. I had one made by George Karr, of Grand-street, which I like very much; and I will describe it the best way I can, although it is no easy matter to describe on paper a rod of any kind:—Length from eleven to thirteen feet; butt of ash, thoroughly seasoned, about one and a quarter inches in diameter, or about as thick as an ordinary Bass-rod. The butt should be hollow, to contain spare

tips. The second, third and fourth joints should be bamboo, so that when the rod is put together, it will be about twelve feet.

The rod should have two spare tips; one should be stronger and shorter than the other, to vary the fishing according to the state of the weather, and circumstances.

The fourth or last joint, tip, should be about three feet, thinner, and more pliant than the spare tops which fit in the bored butt. The first spare top should be two feet long, stiffer and stronger than the original top. The second spare top should be about fourteen inches long, strong and stiff; and in heavy weather, this strong, stiff top will be the one to use.

Rod-making has been brought to such perfection, it would be a waste of time to give further instructions; but still I only know two men in this city who can make a true trolling-rod, viz:—Ben. Welch, of Cherry-street, and George Karr, of Grand-street, near Broadway.

Rings should never be used on rods of this character. The "rail-road" through which the line travels, constitutes one of the peculiarities of this rod. Rings interfere with, and impede the line, and should not be used. The guides used by Welch are the only true ones—they are neat, light, with a thin flat shank, about one-fourth of an inch in length, which is firmly secured on the different joints. There should be very few guides on the rod—five, I consider sufficient, exclusive of the metal case at the top of each tip. This metal case should have a rounded surface, perfectly smooth, and sufficiently large to allow the line to run without the slightest obstruction or friction.

Let me give one hint before I take leave of the rod. I recommend that all trolling-rods should have guides on both sides—that is, a guide on the opposite side of the other: *not on the butt*, but on all joints from the butt to the end; and why? In this kind of fishing there is powerful pressure on the rod; and the very best will, from hard work, become bent, and remain bent, and thus lose its elasticity. To obviate this, turn round the joints, slip the line through the spare guides, and in a few hours the rod is "all straight."

2nd. The Reel.—To give an explanation of this to you, would be absurd. I will simply say, that No. 3 is about the proper size for a trolling-rod, without stop, click, or multiplier. The line cannot run

off too free. According to my opinion, John Conroy can make the best reel in the world.

3rd. THE LINE.—One hundred yards is abundant. Twisted silk is the best line for trolling. I know they kink, when new; but very little use will put an end to it—*id est*, knock the kink out of it.

Plaited lines are very good and cheap, and do not kink; but they absorb the water, and do not run free from the rod.

A mixture of hair in lines, is my abomination. It is the most dangerous and uncertain stuff a man can use. You can never depend on it; the hairs will give way with but little strain; and when you hook the heaviest fish, the greater danger is to be apprehended. I hate them.

4th. THE LEADER AND TRAIN OF HOOKS.—This word "leader" goes against my grain. The old familiar English-Irish sound of "casting-line," has a charm for my ear, equalled only by the still, silent noise of

"Ballynahinch or Costello's flowing waters."

But let leader go for trolling.

Most trollers use twisted gut for a leader, with a small swivel attached to one end. The other end is fastened to the reel-line, either by loop or knot, but a knot is by far preferable. The leader should be two yards long—some good and old hands use three yards. I never use twisted gut. I prefer a leader of good round Salmon-gut.

The train of hooks is attached to the eye of the swivel, at the end of the leader. The train is made of five hooks, and made on the very best and most perfect gut, single. The strand upon which the hooks are tied, is fastened by a knot to another equally strong and perfect strand, which is fastened by a loop to the swivel at the end of the leader. Thus you have the rod, reel, line, leader, and train of hooks. Perhaps a sketch of the train of hooks will be better than an explanation. Here it is:

This train, you will perceive, is made of five hooks. The lip-hook

should be a size or two smaller than the tail-hooks—say No. 5 for the tail, No. 6 for the middle, and No. 7 for the lip. These hooks are joined shank to shank, with the gut between them, and then firmly tied with waxed silk. But I procured from Ireland a set of hooks welded or united together, and they are far superior to single hooks joined by tying together, for they frequently double up, and become very troublesome. George Karr, before named, can rig this kind of train better than any man in this city, as far as my experience goes.

5th. The Bait and Flies.—The proper bait is the Shiner, which can be plentifully procured in all the lakes of Hamilton county. They are taken with the smallest kind of hook, No. 12, with worm bait; and when secured, are put into the bait-kettle, and preserved until used. The mode of putting the Shiner on the train is simple: put the lip or single hook through the lip, the middle hook in the belly, the end hook in the tail.

Unlike Trout-fishing proper, I loop on my flies when trolling. About thirty-six inches from the Shiner I loop on the leader—a large fly; and thirty inches from that fly I loop a smaller-sized one, and then I am rigged to "throw out."

6th. The Bait-Kettle.—This is a most indispensable article for the troller—he can't get along without it. It should be made of strong tin, painted green outside and white inside. The bottom should be wider than the top, but sloping gradually. Conroy has now in his store some very good and complete; but there is one great improvement, *to have the handle lie or fall inside the lid.* I recommend a small gauze ladle, with a short handle, to take the bait from the kettle when required—it will save much trouble, and injury, if not death, to the "dear little creatures."

The kettle should be replenished with water every hour; and one unerring sign that the Shiner needs fresh water, is when he pokes his nose to the surface. When the fishing is over, sink the kettle in the shoal water, and secure it, so that it cannot be tossed about by "wind or weather."

7th. The Boat and Oarsman, or Guide.—Here you must trust to luck—"first come, first served." But any person going to the house

of John C. Holmes, at Lake Pleasant, will find good accommodation, and "honest John" will secure a good guide and a good boat; and from experience I can safely recommend Cowles, Batchellor, and Morrell, of Lake Pleasant, as faithful, honest, persevering, safe and skilful guides and oarsmen.

Trolling is solely done from the boat. The troller sits with his face to the stern; the oarsman in the middle, or rather near the bow, and rows slowly and gently along the lake; about one and a half or two miles an hour is the proper speed.

8th. The Manner of Striking the Fish when the Bait is Taken.—Should there be much wind, thirty-five yards of line is sufficient to run out—if calm, say forty-five or fifty. When a fish is felt, the tip of the rod should be eased off, or given to the fish, in order that he have time to take hold; then give a good surge of the rod, and you will rarely miss striking him. Should you be fishing with two rods, which is almost always the case, pass the other rod to the oarsman Never give the fish an inch, unless by actual compulsion; invariably keep him in hand—feel him at a distance, but still be kind and gentle, not rude or rough. Do not show the gaff until you know that the fish is "used up;" if a small fish, run the net *under* him; and if the fish is spent or exhausted, he will fall into it; but if he shows life, draw him *over* the net. If a large fish, use the gaff, which pass under him, with the point downwards; then turn it up inside, and strike as near the *shoulder* as possible. I say *shoulder* instead of *tail*.

I believe that I have now done with this branch; but let me say, that no good troller uses lead or sinker of any kind. I have seen it used, but used to the destruction of sport and tackle. Sinkers carry the hooks to the bottom, and there you stick either to root or rock.

When trolling, you take, on the average, more fine Brook Trout than Lake Trout. I think that two to one is correct.

One word as to the sporting quality of the Lake Trout. The nine pound and a quarter Trout, before mentioned, may perhaps be an exception; but I do affirm, that the Lake Trout is a fish of game, spirit, and endurance.

I have killed them from one to sixteen and a half pounds. The

sixteen and a half pound Lake Trout was hooked by me, on a single gut leader; from the time I struck him, till his capture, was one hour and forty-five minutes. During the first half-hour, he showed great bad temper, and kept the perspiration flowing off my head; he did sulk for half an hour, but it was a moving and a dragging sulk, unlike the Salmon; and during this sulk he took me along the lake for about a mile; I became fatigued, and bore so heavy on him that I got him near the surface, and from that time until his death was one continued run and fight. He had not the vivacity of the nine and a quarter pound fish, but still I had "my hands full," and was effectually "used up" when he was gaffed by Cowles, my guide.

There is another mode of fishing to which you have made no reference, and which I have never seen described or spoken of in any work upon angling. I mean "cross-fishing," as practised on the large Irish lakes; and although it affords great amusement, still it is a species of poaching, and should not be practised by the legitimate angler.

The cross-line consists of one hundred and fifty yards of strong line, say thin whip-cord, seventy-five yards of which is wound on a card, similar to a card used in trolling for Blue fish, and the other seventy-five yards on another or similar card. In the centre of the line, a flat, square cork, about an inch thick, five inches wide, and of the same length, is secured to a loop in the middle of the cork, and made perfectly stationary, but still so secured that the cork shall lie flat and even on the water. To twenty yards, on both sides of this cork, the flies are attached—that is, three feet from the cork, loop on the first fly, and so on, every alternate two yards, until eight or nine flies are looped on the line, on each side of the cork. The flies should be the usual lake-flies, tied on twisted, or very strong, Salmon-gut of about two feet in length.

Two boats are of course needed. One card is held by the person in one boat, and the other by him in the second boat. The line is then stretched out as the boats separate, until the hand-fly is distant about twenty yards from each boat. The boats are slowly rowed along, in parallel lines. The line should be kept taut, so that the flies skim or dance on the surface of the water. Each angler knows his own fish by the cork, and the person holding the card on the opposite side of the cork has no right to kill the fish which has been struck on the side

nearest to his friend. There is much art and tact necessary in this kind of angling. The friend who is not entitled to the fish has as much sport, and "work on hand," as the person in the opposite boat —he must play the fish with equal care—but the nicety is, in managing the flies. Suppose the fish has taken the fly next the cork—there are, then, say eight flies between the angler and the fish. Two modes can be adopted. Should the fish be small, when the hand-fly is drawn to the boat, it should be laid on the side, with the fly hanging about a foot outside the boat; and so on with each fly, until the fish is captured. Should the fish be large, this mode is dangerous; for, should the fish make a violent run, the flies laid over the side might get fast in the wood, and play the deuce. To obviate this, all the flies can be run up on the line, towards the fish—that is, when the first fly comes to hand, run the loop along the line until it meets the second fly, and so on, until you have all the flies between you and the fish, in, as it were, a heap. After the fish is killed, a few moments will suffice to re-arrange the tackle.

Upon Rackett Lake, Long Lake, Lake Piseco, and other large waters, this mode of fishing would afford great amusement; and the only objection to it is, that it is a deadly way of capturing fish. But it is not half so bad, and is in fact honorable and legitimate, when contrasted with the innumerable "infernal machines" used for the destruction of game of all kinds.

There is an advantage in trolling which I have omitted. You can lay the trolling-rod on the stern of the boat, and use the fly-rod for casting, and thus "kill two birds with one stone"—troll with one rod, and cast your fly with the other. In this way, I raised and killed with my light Trout-rod many of my best and bravest Brook Trout.

I will close this subject by stating, that from the 15th of May to the 15th of June, and from the 1st to the 20th of September, are the best seasons for trolling on the lakes in Hamilton county.

The "black fly" seldom appears before the 1st of June—he is a most infernal tormentor; but one consolation to the angler is, that, unlike the mosquito, he is a sound sleeper, and is never seen, heard, or felt at night. Every man going into the woods should carry a gauze net, sufficiently large to cover the hat and tie round the neck, to protect the face, ears and neck from the black fly.

SET-LINES FOR LAKE-FISHING.

I HAVE only to add to the above complete, and, I think, perfect description of lake trolling, the following account of the manner used in Seneca, and many of the other small lakes, for taking fish with the set-line.

It is not a sporting, but it is a very killing way of taking fish; and there is some fun, after all said and done, in making a haul.

First, the set-line is baited with live Minnows, Shiners, or—best—Lake Herring, *Coregonus Artedi*. Anchor one end of the line firmly near the shore, in fifteen feet water; thence run directly out into the lake from a quarter of a mile to two miles, with a very strong hempen cord, having short whip-cord bait-lines, with hooks armed on gimp attached at every sixteen feet; the depth varying from twenty-five to five hundred feet.

The same method is much used in Scotland, and off the coast of Newfoundland, for deep-sea fishing, and with immense success; the bait there being the Herring proper, or Capelin, and the depth from ten to fifty fathoms.

In the British Provinces this deep-sea line is known as the "bultow."

Whether for lake or deep-sea fishing, this is a very dirty, laborious, unscientific, and unsporting mode of killing fish; and there is nothing to recommend it but the immensity of *pot* to which it ministers.

ARTIFICIAL FLIES.

(See Frontispiece to Supplement.)

THE superiority of "fly-fishing" over every other mode of angling, cannot be questioned, even by the most ardent admirer of the float or ground-bait. The *natural* and acquired skill actually necessary, before any man can throw a "neat fly," is only known to those who have made this method of angling their study and amusement. I believe that no man was ever made a "fly-fisher" from written instruction.

The rudiments may be acquired from books; but a practical knowledge of the art can only be acquired by patience, perseverance, and *good temper*. All works on angling contain something on the subject; and if my angling friends do not find sufficient instruction in my "Fish and Fishing," they must be content to begin with old Isaak, and travel down to the last authority.

It is extremely difficult, if not impossible, to present a correct and satisfactory list of artificial Trout flies. Every angler has his own favorite fly, particularly if he is in the habit of fishing in one particular pond or stream. The fly which may be found most killing on Stump Pond, may not stir a fish in the adjoining water.

In 1848, the "ibis" was all the rage in Stump Pond; it was wholly worthless at Speonk and Mauritchez. The accompanying plate contains flies of acknowledged merit, and generally used in the waters of this State; and I feel assured, from my own experience, as well as from the accounts of others, that no angler can be at fault when his book is supplied with flies of the character described in the drawing.

I am indebted to Thomas Finnegan, of this city, for much valuable information in relation to the exact colors used in making the following described flies; and indeed the greater number of them have been prepared by him, and the coloring arranged under his supervision.

By turning to the plates, and number of each fly, the reader will,

from the following description, see the material of which it is composed, its color, quality and peculiar character.

No. 1. RED PALMER HACKLE.—*Body*—Dark red colored mohair, ribbed with gold or silver twist. *Hackle*—Of the red cock, worked with red silk. *Hook*—No. 5, 6, or 7.

No. 2. PEACOCK PALMER HACKLE.—*Body*—A full fibre of peacock herl. *Hackle*—Of a dusky red cock, worked with red silk. *Hook*—No. 5, or 6.

No. 3. BLACK SILVER PALMER HACKLE.—*Body*—a fibre from a black ostrich feather, ribbed with silver twist. *Hackle*—Black, wrapped over the whole body with black silk for fastenings. *Hook*—No. 5, 6, or 7.

No. 4. YELLOW PALMER HACKLE.—The *body* is made of white hackle dyed yellow. The hackle of yellow silk. *Hook*—No. 5, 6, or 7.

No. 5. BLACK PALMER HACKLE.—The *body* of black ostrich's herl, wrapped with a black cock's hackle. *Hook*—No. 5, 6, or 7.

No. 6. BLACK PALMER HACKLE RIBBED WITH GOLD.—The *body* of peacock's herl, wrapped with a black cock's hackle, and ribbed with gold twist. *Hook*—No. 5, 6, or 7.

The flies from No. 1 to 6, inclusive, which I style "Palmer hackles," are known to every "fly-fisher" as most effective in taking Trout; and as they are intended to represent the larvæ or caterpillars of flies, as well as some of the insects themselves, it is evident that their size and color may be varied. In angling vocabulary, the terms "black hackle," "red hackle," &c., are almost invariably applied to all flies of the above character; and it may be, that the above addition of the term "Palmer," may be deemed by many good sportsmen to be an innovation upon old-established angling phraseology. I know that criticism should be avoided in the use of fly-fishing terms, which every man knows cannot be justified by any literary rule; but some angling terms are so glaringly absurd and contradictory, that it seems to me actually necessary to correct evident inconsistencies, when such corrections do not confound or mystify that piscatory learning which time has, as it were, authorised as an angling alphabet

In several works upon angling, the term "hackle" is variously applied. We find it synonymous with "palmer," which expresses an artificial fly and a caterpillar. We find instructions to prepare the "hackle" to make the fly; and again, we are instructed to fish with a "hackle" or a "palmer." Thus the angler is confounded. The "hackle" is at one moment a feather, and at the next a fly—the fly of one angler is the hackle of another; a hackle is nothing more than the feather of a bird, and a portion of the material which composes the palmer.

There is also some apparent inconsistency in the use of the term "palmer fly." The term "palmer," as I understand it, is only applicable when speaking of the "palmer worm;" but as this worm is destined to become a winged insect, the term "palmer fly" or "palmer hackle" is, according to my notion, a more expressive term than "hackle" or "palmer" alone. The palmer is the insect represented —the hackle is the material to form the representation.

The foregoing few general remarks I have deemed necessary—not from any desire to infringe upon old and perhaps well-established names, but for the purpose of inducing others to examine the subject.

A little research upon this apparently unimportant matter led me into a labyrinth, from which I have with difficulty escaped; and I am by no means assured that my views may not increase the mystification of our angling vocabulary.

No. 7. Green Drake or May Fly.—*Wings*—The mottled feather of the mallard dyed yellow, to stand rather erect and divided. *Body*—Yellow mohair, ribbed with peacock's herl and orange silk. *Legs*—Red ginger hackle. *Tail* forked with two or three hairs. *Hook*—No. 5, 6, or 7.

There are other modes of dressing this fly, but I prefer the above.

No. 8. Gray Drake.—*Wings*—The gray feather of a mallard, if not too dark, to stand erect. *Head*—A morsel of peacock's harl. *Body*—Fine down from a white pig, light gray camlet, or whitish gray ostrich herl, striped with deep maroon silk. *Tail* forked with two or three gray hairs. *Legs*—A grizzled hackle. *Hook*—No 5, 6, or 7.

The green or gray drake is not, so far as I can judge, an American

fly; still I have found both to be killing flies, from the middle of May to the close of June. Every angler who has fished in England and Ireland knows of their surprisingly attractive qualities; and that during the "green drake month" the Trout reject every kind of artificial and natural bait, for the "green or gray drake;" and that at no period of the Trout season are the fish so powerful, vigorous, and fine-flavored as when this apparently luxurious and sanative food appears on the streams and lakes.

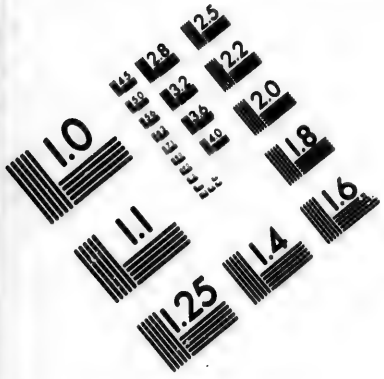
If I am correct in [illegible]ving that it is not an American fly, and consequently not an imit[illegible] of any existing American insect, and that it is still a killing artificial bait on American waters, then the position taken by some of the best anglers will hold to be true, that for the purpose of successful fly-fishing, it is unnecessary to imitate the natural insect.

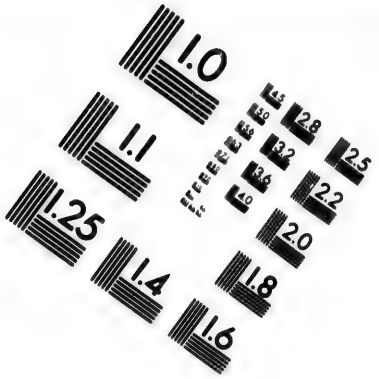
It is necessary to say a word in relation to the mode of casting with those flies. The green drake is thrown in the usual way; but the action of the gray drake being entirely different from the green, the same mode of casting will not answer. Unlike the green drake, the gray drake does not *rest* on the water. His light on the water is momentary—"no sooner *on* than *off*." Therefore, the artificial gray drake should be thrown right over the Trout, and then lifted so as to imitate the rise and fall of the natural fly.

No. 9. The Cow-dung Fly.—*Wings*—The feather of a landrail, dressed a little longer than the body, to lie flat on the back. *Body*—Yellow wool, with a little brown fur, to give the body a dirty orange color; the body tolerably full. *Legs*—Ginger hackle, same color as the body. *Hook*—No. 6, 7, or 8.

This is my favorite fly. As a standard and universal fly-bait for Trout, I think that the Cow-dung should stand "A. No. 1." It is not much known to American anglers, and is rarely used on American waters.

The origin of the fly is not aquatic. It is found on the excrement of animals, particularly on that of the cow. In windy weather it is blown from the land to the water; and no bait is more greedily seized by the Trout. In March and April I use it as a tail-fly; in May and June as a dropper; and in July and August as a hand-fly. I regulate





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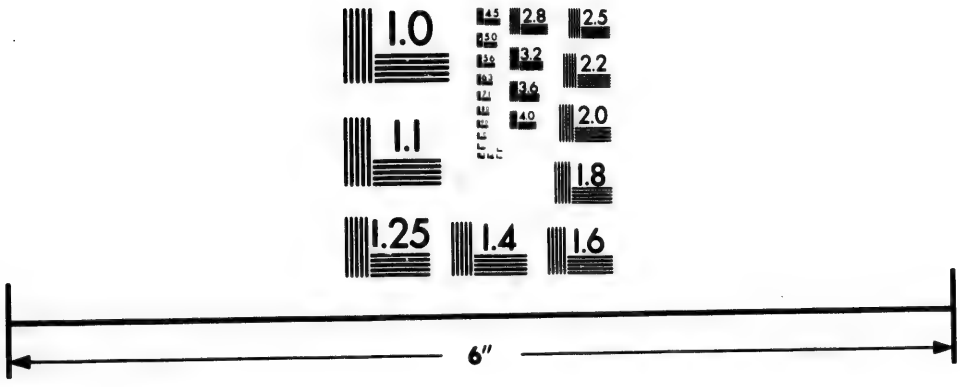

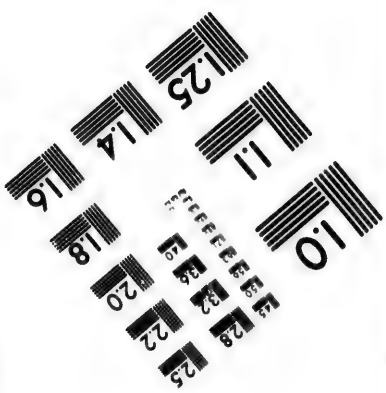

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the size of the fly according to the state of the wind and water. There are few flies so frequently murdered in dressing as the "cow-dung;" and there is no fly in the whole list which requires more care in shape and color.

No. 10. The Bee-Fly.—*Wings*- Feather, the pigeon's wing, dark. *Body*—Chenil of various colors, arranged in stripes in the following order: black, white, light yellow, white, black, white. *Legs*—Light black hackle.

No. 11. The Black Gnat.—*Wings*—Pale starling feather, or hen blackbird. *Body*—Black ostrich herl, or black worsted. *Hook*—No. 9, or 10.

This fly is generally dressed short and thick, as represented in the plate, and is classed among the "midge flies." In summer, when the water is clear and low, it is a good fly. In cloudy weather it may be used through the day; but in bright days, it is only useful in the morning and evening.

No. 12. Hare's Ear.—*Body*—Fur from a hare's ear. *Wings*—Feather of a starling's wing. *Legs*—Ginger cock's hackle. *Hook*—No. 6, 7, or 8.

From the first to the last day of the Trout season, I have found this fly to be a good killer and a favorite bait. It is not generally known to the American angler. Finnegan, before referred to, can tie this fly to perfection. I prefer to use it as a dropper.

No. 13. The Cock-tail.—*Wings*—The bright feather of a snipe's wing. *Body*—Yellow mohair. *Legs*—Light black hackle. *Tail* forked with two long hairs.

Let the angler try this fly, and then judge of its quality. I include it in the list, because a friend has given it a good character.

No. 14. The "Whirling Dun."—*Body*—Blue fur and light brown mohair, wrapped with yellow silk. *Wings*—Snipe's feather, or the pale feather of a dun-colored bird. *Legs*—Blue cock's hackle. The tail of two hairs from a light-colored muff.

This fly takes its name from the whirling manner of its flight. It

can be used with success, from the middle of May to the first fortnight in July. With a good breeze, it is a killing fly.

No. 15. THE KINGDOM FLY.—*Wings*—A woodcock's feather. *Body*—White silk, striped with green. *Legs*—Red cock's hackle. *Hook*.—No. 6, 7, or 8.

No. 16. THE "WHITE GNAT."—*Wings*—A small white feather. *Body*—White silk. *Legs*—Red cock's hackle.

This is a delicate fly, and will kill in the evening of the summer months.

No. 17. THE "BLUE DUN."—*Wings*—From the blue part under the wing of a male widgeon; to stand erect. *Body*—Blue fur from the water-rat or squirrel. Blue mohair may be substituted for fur, if the true shade of the natural fly cannot be procured. *Legs*—A very fine hackle, as near the color of the body as possible. *Whisks*—Two blue hairs.

It is extremely difficult to procure the feather of the exact color of the natural fly, or sufficiently delicate for the wings of this *midge-fly*. It is a good fly early in the season.

No. 18. THE "RED ANT."—*Wings*—Light starling's feather. *Body*—Peacock's herl made thick at the tail, and a ginger hackle for legs.

In warm, gloomy weather, without electric clouds, ant-flies are killing baits during the day; but they are nearly useless as a morning or evening fly.

No. 19. THE "GOLD SPINNER."—*Body*—Orange silk, ribbed with gold twist. *Wings*—Starling's feather. *Legs*—Red hackle.

From June to the middle of July, this is a good general fly.

No. 20. THE "WHITE MOTH."—*Wings*—The feather of a white owl. *Body*—White cotton, and a white cock's hackle wrapped round the body.

This is a night fly, and should be used in a dark, gloomy night. It requires an experienced hand to fish successfully with this fly. The moment the rise of the fish is heard, the angler should instantly strike.

Between 9 and 12 o'clock, one night in the month of July, 1847, I took eleven handsome fish with a "white moth." Care should be taken in the selection of your fishing ground. A position free from all obstruction is indispensable, to insure either pleasure or success.

No. 21. The "Governor."—*Wings*—A woodcock's feather. *Body*—A peacock's herl, tied with orange silk.

This is a good fly in June and July.

No. 22. The "March Brown."—*Wings*—Mottled feather from a partridge's tail, set upright. *Body*—Light hair and red squirrel's fur, mixed. *Legs*—a grizzled hackle. *Tail Whisks*—Two hairs, reddish brown.

This fly, like a great many others, is known by various names. I believe that in Wales, it is called the "cob-fly." In Ireland, it is called the "caughlan;" and in that country it is highly prized as a superior fly. Some good anglers make the body of hare's ear and yellow worsted. I have not found it to be a killing fly on Long Island, although in some streams in Connecticut, it did good service in the month of April.

No. 23. The Stone-Fly.—*Wings*—A mottled feather of the hen pheasant, or the dark gray feather of the mallard, inclined to red—to be dressed rather long. *Body*—Dark brown fur, or the dark part of a hare's ear, mixed with yellow camlet or mohair. *Legs*—A few laps of a grizzled cock's hackle; and in the finishing, two dark hairs are frequently used for the antennæ, or feelers.

The angling history of this fly is full of interest; but as I merely propose to give a list of such flies as experience justifies me in recommending, together with a statement of the materials, colors, &c, of which they are formed, I will in this place simply refer my readers to the account given by Cotton, of this fly; but I cannot refrain from expressing my unqualified dissent from the remarks in the "North Country Angler," in relation to the natural history of this fly; and it is to me a matter of astonishment, that Mr. Daniel, in his great work which treats on fishing, has fallen into great error in reference to the stone-fly.

No. 24. THE WILLOW-FLY.—*Wings*—A dark grizzled cock's hackle. *Body*—Blue squirrel's fur, mixed with yellow mohair.

This fly appears very late in the season, and is a favorite with some good anglers.

I have thus gone through the catalogue or list of flies in the colored plate, but I do not desire to be understood as intimating that this list contains a specimen of *all* the best killing flies.

Every angler has his own peculiar notion in regard to the best fly; and the difficulty of presenting a perfect catalogue, will be very apparent, when it is considered that there are upwards of one hundred and twenty-five flies which compose the list of various writers; and as the *name* of the fly of one writer bears a different name and description from that of another, it is more than probable that the name and description of some of the flies in my list may not be in accordance with the views and opinions of many old and experienced anglers.

It is a mooted question among the very best "fly-fishers," whether an exact representation of the living insect, is necessary to insure success in angling with the fly. The Scotch flies are not imitations of living insects; and the best anglers in that country maintain the opinion that it is absolutely useless and unnecessary to imitate any insect, either winged or otherwise; and I find that Professor Wilson advocates the inutility of such imitations.

Professer Rennie says that "the aim of the angler ought to be, to have his artificial fly calculated, by its form and colors, to attract the notice of the fish; in which case he has a much greater chance of success, than by making the greatest efforts to imitate any particular species of fly."

The opinion of such authorities tends to shake old settled notions; and although I invariably endeavor, when dressing a fly, to imitate the living insect, still I have seen nondescript flies beat all the palmer hackles, and the most *life-like* flies that ever graced a casting-line.

I shall leave the subject where I found it—in doubt—trusting that some more experienced hand, and lover of the art, will, ere long, enlighten the angling community, not only upon this branch of the subject, but upon the "fly" in general. Every distinct insect has a history full of interest and instruction; and although some valuable

treatises have been published, which depict the insects and their types in their natural colors, still a compilation of all that is instructive, with such additional information as research and experience may procure, would make a volume of deep interest to the naturalist and the angler.

DESCRIPTION OF SALMON AND LAKE TROUT FLIES.

Plate to face page 224—body of work.

THE SALMON FLIES three in number. Upper row, from left to right.

LARGEST FLY, No. 1.—Blue worsted head; black hackle body, with silver thread; upper wings, speckled turkey; broad wing, bright golden pheasant; green peacock herls, blue-jay and red hackle legs; bird of paradise tail; scarlet-dyed antennæ.

MIDDLE FLY.—Red worsted head; ruffed grouse hackle and blue-geai wings; green peacock herl; red hackle body; ruffed grouse hackle legs; orange silk tuft; bird of paradise tail; blue macaw antennæ.

THIRD FLY.—Green peacock harl head; speckled turkey and blue geai wings, with copper peacock's herl; red hackle legs; blue floss-silk body; bird of paradise tail.

DESCRIPTION OF LAKE TROUT FLIES.

Plate to face page 234—body of work.

LEFT-HAND FLY, LOWER ROW, No. 2.—Black floss silk head; brown peacock's wing; red hackle legs; copper peacock's herl body; orange worsted tuft.

RIGHT-HAND.—Blue worsted head; ruffed grouse upper wings; golden pheasant under wings; brown cock's hackle legs; pink silk body, with gold twist; bird of paradise tail; green peacock's herl antennæ.

DESCRIPTION OF TROUT FLIES.

To face page 253—body of work.

UPPER ROW, FIRST FLY TO LEFT-HAND.—Black cock's hackle, dark blue worsted body.

SECOND.—Scarlet ibis wings; scarlet silk body; silver twist.

THIRD.—Green peacock's herl wings; ruffed grouse hackle legs; orange silk body; green peacock herl tuft.

FOURTH—Cock a bondhu hackle; red silk body; silver thread.

FIFTH.—Cock a bondhu hackle; green worsted body.

SIXTH.—White miller; black silk head; white owl wings; white ostrich legs; white chenil body.

SECOND ROW, FIRST TO THE LEFT.—BEE.—Gray pigeon wings; black and yellow silk body.

SECOND.—Green drake; Mallard's speckled wing; light brown hackle legs; pale brown mohair body; tail, three black horse-hairs.

THIRD.—Black midge; gray goose wings; black chenil body.

THIRD ROW, FIRST TO THE LEFT.—Brown turkey's wing; cock a bondhu hackle legs; red worsted body; speckled mallard tail.

SECOND.—Snipe's wing; gray mouse body; ruffed grouse hackle legs; speckled mallard tail.

FOURTH ROW, FIRST TO THE LEFT.—Yellow dyed hackle wings; yellow worsted body; silver twist.

SECOND.—Furnace hackles; green worsted body.

TABLE OF DEPTHS, BAITS, HOW TO STRIKE AND KILL.

NAME OF FISH.	DEPTH OF WATER.	HOW NEAR BOTTOM.	MOVING OR STILL BAIT.	HOW TO STRIKE.	HOW TO PLAY.
Striped Bass,	From 4 to 25 feet.	Within a foot or two of bottom.	Stationary, unless trolling for with rod, or squid.	Strike quickly.	Kill as quickly as he will let you.
Weak Fish,	" 10 to 35 feet.	Within two feet of bottom.	Stationary.	Strike quickly.	Kill as quickly as he will let you.
King Fish,	" 10 to 35 feet.	Not above a foot from bottom.	Stationary.	Strike quickly.	Kill as quickly as he will let you.
Sea Bass,	" 5 to 50 fathom.	Three feet from bottom.	Stationary.	Strike quickly.	Pull by main force.
Black Fish,	" 5 to 50 feet	On the bottom.	Stationary.	Strike quickly.	Don't give an inch.
Sheep Fish,	16 feet.	On the bottom.	Stationary.	Let him run and strike himself.	Pull up by force, if you can.
Black Drum,	8 feet and over.	On the bottom.	Stationary.	Let him run and strike himself.	Kill, if you can.
Porgee,	25 to 100 feet.	Off the bottom.	Stationary.	Strike quickly.	Pull up immediately.

TABLE OF TACKLE, AND AVERAGE WEIGHT.

NAME OF FISH.	WHAT ROD AND LINE.	WHAT SNOOD.	WHAT HOOK.	WHAT SINKER.	WHAT WEIGHT.
Striped Bass,	Trolling-rod, reel and hemp line, or squid-line without rod.	Gut.	No 1 to 4 Kirby.	Enough to keep bait stationary, according to tide.	20 to 28 lbs., with rod, up to 50, with squid.
Weak Fish,	Trolling-rod, reel and hemp line.	Gut.	No. 0 to 1 Kirby.	Do. do.	½ to 10 lbs., rod.
King Fish,	Trolling-rod, reel and hemp line.	Gut.	No. 4 Kirby or Limerick.	Do. do.	½ to 2 lbs., rod.
Black Fish,	Trolling-rod, reel and hemp line.	Gut.	No. 2 Black-fish.	Enough to keep bait stationary *on bottom.*	1 to 16 lbs.
Sea Bass,	Stout hemp drop-line.	None.	No. 2 Kirby.	Half pound.	1 to 10 lbs.
Sheep's-head,	Stout hemp drop-line, or stout rod, hemp line and reel.	None, or Gimp.	No. 0 to 1 Black-fish.	Enough to keep bait on bottom.	5 to 15 lbs., average 10 lbs.
Porgee,	Drop-line.	None.	No. 0 to 1 Black-fish.	Half pound.	¾ to 2 lbs.
Drum,	Drop-line, or strong rod and reel.	None, or Gut.	No. 0 to 1 Black-fish.	Enough to keep bait on bottom.	10 to 60 lbs.

TABLE OF SPRING, SUMMER AND AUTUMN BAITS.—TIMES OF TIDE AND DAY.

NAME OF FISH.	BEST SPRING BAIT.	BEST SUMMER BAIT.	BEST AUTUMN BAIT.	TIME OF DAY.	TIME OF TIDE.
Striped Bass,	Shad Roe in rivers, Live Bait, Trolling, or Red Ibis Fly.	Shrimp, Shedder, Crab, soft Crab.	Shrimp, Shedder Crab, soft Crab.	Personally, I believe one time is as good as another. But all men have their fancies.	Some persons prefer the turns of the tides; some high or low slack water. I think there is no choice except to keep the proper depth of water.
Weak Fish,	None.	Shrimp.	Shrimp.		
King Fish,	None.	Crab.	None.		
Black Fish,	Soft Clam, Crab, Shrimp, Fiddlers.	Soft Clam, Crab, Shrimp, Fiddlers,	Soft Clam, Crab, Shrimp, Fiddlers.		
Sea Bass,	Rockaway or soft Clams opened.	As in Spring.	As in Spring.		
Sheep's-Head,	Muscle or Clam, not opened.	As in Spring.	As in Spring.		
Porgees,	Hard Clam cut Bait.	As in Spring.	As in Spring.		
Sea Perch,	Shrimp.	As in Spring.	As in Spring.		

Be it observed, that I do not note Mackarel, because I do not regard him as game; and secondly, that no sportsman is presumed to catch Drum or Porgees if he can help it.